

MONTANA SECOND JUDICIAL DISTRICT COURT
SILVER BOW COUNTY

GREGORY A. CHRISTIAN, et al.,)
)
 Plaintiffs,)
)
 vs.) No. DV-08-173
)
 BP AMOCO CORPORATION, et al.,)
 ATLANTIC RICHFIELD COMPANY,)
 et al.,)
)
 Defendants.)
 _____)

DEPOSITION OF RICHARD C. PLEUS, Ph.D.
Seattle, Washington
Monday, July 29, 2013

Reported by:
MARIANNA DONNER
CSR No. 7504
JOB No. 304822

MONTANA SECOND JUDICIAL DISTRICT COURT

SILVER BOW COUNTY

GREGORY A. CHRISTIAN, et al.,)

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Plaintiffs,)

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vs.) No. DV-08-173

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BP AMOCO CORPORATION, et al.,)

ATLANTIC RICHFIELD COMPANY,)

et al.,)

)

Defendants.)

)

Videotaped Deposition of

RICHARD C. PLEUS, Ph.D., pages 1

through 255, taken on behalf of

Defendant Atlantic Richfield Company,

at 2801 Alaskan Way, Suite 300, Seattle,

Washington, beginning at 9:36 a.m. and

ending at 5:27 p.m. on Monday,

July 29, 2013, before MARIANNA DONNER,

Certified Shorthand Reporter No. 7504,

Registered Professional Reporter

No. 38410.

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24 Also Present:

25 BROOK YOUNG, Videographer

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1 Seattle, Washington

2 Monday, July 29, 2013

3 9:36 a.m. - 5:27 p.m.

4
09:36 5 THE VIDEOGRAPHER: This is the deposition of
6 Richard Pleus in the matter of Gregory A. Christian,
7 et al., versus BP Amoco Corporation, et al., cause
8 number DV-08-173 in the Montana Second Judicial
9 District Court, Silver Bow County, and was noticed
09:36 10 by Davis, Graham & Stubbs LLP.

11 The time now is approximately 9:36 a.m. on
12 this 29th day of July 2013, and we are convening
13 at 2801 Alaskan Way, Suite Number 300, in Seattle,
14 Washington.

09:36 15 My name is Brook Young from Buell Realtime
16 Reporting, LLC, located at 1411 Fourth Avenue, Suite
17 Number A-20 in Seattle, Washington 98101, working on
18 behalf of Biehl, et al., Certified Shorthand
19 Reporters, Inc.

09:36 20 Starting on my left, would counsel and all
21 present please identify themselves for the record.

22 MS. STEVENSON: Shannon Stevenson on behalf of
23 the defendant Atlantic Richfield Company.

24 MR. STALPES: Justin Stalpes on behalf of the
09:36 25 plaintiffs.

1 THE VIDEOGRAPHER: And would the parties on the
2 phone identify themselves, please.

3 MR. THIESZEN: Mark Thieszen at Poore, Roth &
4 Robinson in Butte, Montana, on behalf of defendants
09:36 5 Atlantic Richfield Company.

6 MS. DROLL: Emily Droll of Davis, Graham &
7 Stubbs on behalf of defendant Atlantic Richfield
8 Company.

9 THE VIDEOGRAPHER: The court reporter may now
09:37 10 swear in the witness.

11 (Witness sworn.)

12 THE WITNESS: Yes.

13

14 RICHARD C. PLEUS, Ph.D.,

15 having been first duly sworn,

16 was examined and testified as follows:

17

18 EXAMINATION

19 BY MS. STEVENSON:

09:37 20 Q Good morning, Dr. Pleus. I'm Shannon
21 Stevenson. I'm a lawyer. I represent Atlantic
22 Richfield Company in this matter.

23 Can you give us your full name for the
24 record.

09:37 25 A Yes. Richard Carl Pleus.

1 Q And do you understand that you are here
2 today to testify because you've disclosed certain
3 expert opinions in this matter?

4 A Yes.

09:37 5 Q You've had your deposition taken before,
6 correct?

7 A I have.

8 Q How many times, do you think?

9 A I think in the past 20 years or so, my best
09:37 10 recollection is maybe 40. Somewhere between 30 and
11 40 possibly.

12 Q Roughly twice a year?

13 A Roughly.

14 Q Okay. So you are familiar with this drill?

09:38 15 A As much as I can be. But this is not my
16 main job, if you will.

17 Q I'll just remind you that you are under an
18 oath to tell the truth today just as if you were
19 testifying in front of a judge and jury.

09:38 20 Do you understand that?

21 A I do.

22 Q And that your answers should be truthful and
23 accurate to the best of your ability?

24 A Correct. I understand.

09:38 25 Q You understand that Marianna, our court

1 reporter, is typing down everything that we say?

2 A I do.

3 Q And that so we should try not to speak over
4 each other if we can help it for her benefit.

09:38 5 A I understand.

6 Q Is there any reason today why you wouldn't
7 be able to give your best and most accurate answers
8 to my questions?

9 A Nothing that I'm aware of.

09:38 10 Q I am certain today at some time I will ask
11 a question that makes no sense. If I ask a question
12 that you don't understand, will you let me know?

13 A I will.

14 Q Did you do anything to prepare for this
09:39 15 deposition?

16 A I did.

17 Q What did you do?

18 A I've done a number of things. One would be
19 to prepare an expert report. Another would be to
09:39 20 review a report by Dr. Joyce Tsuji. Another task I
21 was asked to do was to look at the CDM Human Health
22 Risk Assessment. Another thing I was -- I did in
23 preparation was to review a number of papers that
24 relate to the risk assessment or relate to
09:39 25 Dr. Tsuji's expert reports.

1 Those are some of the things that I can
2 think of.

3 Q And setting aside the work that you did to
4 prepare for your -- to draft your expert reports,
09:40 5 your initial report and your rebuttal report in this
6 case, did you do anything specific to prepare for the
7 deposition?

8 A I sat down and reviewed all of those
9 documents or reviewed a number of documents. Those
09:40 10 are the things that I specifically did for
11 preparation here.

12 Q Did you meet with any attorneys to prepare?

13 A I didn't meet with any attorneys, but I have
14 met with Mr. Stalpes, if I said that correctly. I
09:40 15 met him this morning. We had a cup of coffee. I've
16 had brief conversations in terms of what do I -- the
17 deposition date, just simple things along that line.

18 Q Following the preparation of your expert
19 reports but in advance of this deposition, did you
09:40 20 review any additional research?

21 MR. STALPES: Objection; vague.

22 THE WITNESS: When you say "additional
23 research," there were documents that I have provided
24 in my expert report and the references that are
09:41 25 produced in Dr. Tsuji's report.

1 Is there anything more specific that you are
2 asking for?

3 BY MS. STEVENSON:

4 Q Did you review anything additional to those
09:41 5 materials that you had reviewed in the course of
6 preparing your expert report in order to prepare for
7 this deposition?

8 A Nothing that I can recall.

9 Q Did you do any research on the Internet or
09:41 10 any other sources after preparing your report but
11 before this deposition?

12 A Nothing that I can recall other than just
13 fact checking as questions came up during my review
14 of the documents.

09:42 15 (Deposition Exhibit 1 was
16 marked for identification and is
17 attached hereto.)

18 BY MS. STEVENSON:

19 Q Handing you what's been marked Exhibit 1.
09:42 20 This was a letter I received from plaintiffs' counsel
21 on Friday that appears to be a supplement to your
22 expert report.

23 Do you agree with that?

24 A Yes.

09:42 25 Q And this is a letter that you authored?

1 A Yes.

2 Q And as I understand it, you are correcting a
3 mistake that was in your initial expert report; is
4 that correct?

09:42 5 A Well, I think Dr. Tsuji was able to provide
6 a little bit more information for which then I made a
7 correction.

8 Q And your original opinion, I believe, was
9 that the ratio of arsenic concentration in soil to
09:42 10 interior dust was higher than the ratio that was used
11 by CDM in preparing the human health risk assessment;
12 is that right?

13 MR. STALPES: Object to the form.

14 THE WITNESS: Can you repeat that, please?

09:42 15 BY MS. STEVENSON:

16 Q Sure.

17 Can you read that back?

18 (The record was read as follows:

19 "QUESTION: And your original
20 opinion, I believe, was that the ratio
21 of arsenic concentration in soil to
22 interior dust was higher than the
23 ratio that was used by CDM in
24 preparing the human health risk
09:43 25 assessment; is that right?")

1 THE WITNESS: Yes, and I think the -- in part,
2 it was -- or in full disclosure was I think the lack
3 of clarity in terms of some of the reports that I had
4 read. So this just provided a little bit more
09:43 5 information.

6 BY MS. STEVENSON:

7 Q Okay. And as a result of this information,
8 you concluded that the ratio used by CDM was correct.
9 Is that fair to say?

09:43 10 A I don't think "correct" is specific here. I
11 think it was in the -- it was in a ballpark that was
12 more consistent with the data that has been
13 generated.

14 Q And as I understand it, the correction you
09:44 15 were making is that you had originally understood
16 some sampling from Pioneer to be reporting arsenic
17 concentration in soil when it was, in fact, reporting
18 arsenic concentration in exterior dust; is that
19 right?

09:44 20 A After reading through the report of the 2009
21 Pioneer dataset, it wasn't particularly clear exactly
22 what they were referring to at that time. So it made
23 sense based on the limited information that they
24 provided.

09:44 25 Q And you thought that they were referring to

1 soil; is that right?

2 A It wasn't clear, but it seemed that that
3 would make the most sense at the time.

4 Q And that's what you reported in your
09:44 5 original expert report?

6 A That's my original interpretation, which has
7 then been corrected by this.

8 Q So you've corrected that now to reflect that
9 they were actually reporting arsenic concentration in
09:45 10 exterior dust; is that right?

11 MR. STALPES: Objection; asked and answered.

12 THE WITNESS: I'm sorry. Can you repeat that,
13 please.

14 BY MS. STEVENSON:

09:45 15 Q Sure.

16 The correction that you are making is to now
17 reflect your understanding that what they were
18 actually reporting was not arsenic concentration in
19 the soil but in exterior dust?

09:45 20 MR. STALPES: Same objection.

21 THE WITNESS: Yes. The value in the Pioneer
22 2009 for the -- under the category "Exterior" was for
23 dust, not for soil.

24 BY MS. STEVENSON:

09:45 25 Q And as a result of that, you modified the

1 risk assessment that you conducted in your expert
2 report; is that correct?

3 A Well, I think modified is a term that, yes,
4 the value was then corrected but the overall impact
09:45 5 was minuscule.

6 Q Okay. The overall impact was a change from
7 the screening level from 7.4 -- you have milligrams
8 per kilogram.

9 Is milligrams per kilogram the same as parts
09:46 10 per million?

11 A It can be, yes.

12 Q For arsenic, is it?

13 A Yeah.

14 Q So that resulted in you changing your
09:46 15 screening level from 7.4 parts per million to
16 9.7 parts per million.

17 Is that fair to say?

18 A Yes. Roughly that's the change based on the
19 calculations that I performed.

09:46 20 Q Are there any other aspects of your report
21 that you changed your mind about after reviewing
22 Dr. Tsuji's report?

23 MR. STALPES: Object to the form,
24 mischaracterization of what happened here.

09:46 25 THE WITNESS: If you could just repeat that

1 part.

2 BY MS. STEVENSON:

3 Q Sure.

4 After reviewing Dr. Tsuji's report, did you
09:46 5 change any of your opinions, other than the one
6 mentioned in Exhibit 1, with respect to your report?

7 MR. STALPES: Object to the form.

8 THE WITNESS: Well, if what you are asking is
9 did I change my opinion, the answer is no. That what
09:47 10 I did was correct one data point out of literally
11 tens or dozens or hundreds of them and that that
12 particular point really had minuscule effect on
13 doing -- on conducting of a standard risk assessment.

14 BY MS. STEVENSON:

09:47 15 Q Sure. I understand your point.

16 You didn't -- meaning that you didn't change
17 your overall opinion based on this -- what you've
18 pointed out in Exhibit 1, right?

19 A Correct.

09:47 20 Q Were there any parts of your opinion that
21 you gave in your opening report that you changed your
22 mind about in any way after reviewing Dr. Tsuji's
23 report?

24 MR. STALPES: Objection; vague.

09:47 25 THE WITNESS: If what you are asking is after

1 reviewing Dr. Tsuji's report, did I -- was there any
2 other information that was useful in conducting my
3 risk assessment, the answer is no.

4 BY MS. STEVENSON:

09:48 5 Q And what about after reviewing Dr. Tsuji's
6 rebuttal report?

7 A After reviewing Dr. Tsuji's rebuttal report,
8 I looked at it very carefully, examined it and again
9 when you compare that to conducting a standard risk
09:48 10 assessment, I had no changes that I felt were
11 necessary.

12 (Deposition Exhibit 2 was
13 marked for identification and is
14 attached hereto.)

09:48 15 BY MS. STEVENSON:

16 Q Dr. Pleus, handing you Exhibit 2, which was
17 the notice for your deposition today.

18 Did you receive a copy this?

19 A I did.

09:48 20 Q There was a subpoena portion of this that
21 asked you to bring any and all invoices and/or other
22 documents evidencing time spent by you and others in
23 the preparation of your expert reports.

24 Did you bring any documents like that today?

09:49 25 A I did.

1 Q Okay. And do you have them with you?

2 A I do.

3 Q We'll take a break a little bit later and
4 I can hopefully review those and/or make a copy of
09:49 5 them.

6 A That's fine.

7 (Deposition Exhibit 3 was
8 marked for identification and is
9 attached hereto.)

09:49 10 BY MS. STEVENSON:

11 Q I want to take a little bit of time to ask
12 you about your CV, which I've marked there as
13 Exhibit 3, and this is just a copy of the one that
14 was in your -- provided in your expert report.

09:49 15 Do you recognize that?

16 A Yes, I do.

17 Q Starting with your education, you have
18 listed there your Bachelor's from Michigan State,
19 Master's from University of Minnesota and a PhD at
09:50 20 University of Minnesota in environmental toxicology;
21 is that right?

22 A That's correct.

23 Q Do you have any other post high school
24 degrees?

09:50 25 A Degrees specifically?

1 Q Yes.

2 A No degrees.

3 Q Do you have any other educational background
4 that is relevant to the expertise that you are
09:50 5 relying on in this case?

6 A Yes. I mentioned post doctoral training in
7 neuropharmacology. I think that's sufficient. I've
8 taken I think they are called workshops, intensive
9 workshops, for example, in epidemiology at the
09:50 10 University of Minnesota. I've taken other courses
11 throughout my roughly 25-plus years as a
12 toxicologist. I continue to teach courses from time
13 to time or give lectures in areas of toxicology.
14 Those are some examples that I can think of.

09:51 15 Q When you talked about the workshops in
16 epidemiology that you have taken, how many workshops
17 like that have you done?

18 A Well, one that I can recall relatively
19 clearly is one, and it was I believe three to
09:51 20 four weeks of pretty intensive daily lectures at
21 the University of Minnesota on epidemiology.

22 Q When did do you that course?

23 A The best of my recollection would be in the
24 1980s.

09:51 25 Q Are there any other workshops that you have

1 taken on epidemiology that you think are relevant to
2 your expertise in this case?

3 A None that I can recall, but I have also
4 conducted workshops where I've been the instructor on
09:52 5 risk assessment and the process of risk assessment.
6 I think that would apply to this as well.

7 Q All right. Any other education that
8 you've had where you have been the student, besides
9 the workshop you just mentioned, that you think is
09:52 10 relevant to your expertise in this case?

11 A Nothing that I can recall, but I do
12 understand that I have had other workshops that I've
13 attended.

14 Q You brought up your teaching. And from
09:52 15 your resume, it looks like you were a university
16 instructor from approximately 1979 until about 1989.

17 Is that accurate?

18 A I think that's a reasonable estimate. There
19 were different positions that I held within that
09:53 20 particular college, for example, whether it was an
21 instructor or some type of associate, whatever the
22 university had at that time for its classification
23 system.

24 Q What type of courses did you teach during
09:53 25 that time period?

1 A During that time period, I taught an
2 introductory environmental sciences course. I
3 also taught a human physiology course. Those were
4 undergrad. First or second year science-type
09:53 5 courses. I also taught courses in pharmacology,
6 neuropharmacology. I also taught courses in
7 integrating science into a more multidisciplinary
8 approach. And those were all upper level
9 undergraduate courses.

09:54 10 Q Did you teach any graduate level courses
11 during that period of time?

12 A I did not teach any graduate courses during
13 that time.

14 Q You didn't even have a graduate degree at
09:54 15 that time I guess; is that right? Or you had a
16 Master's?

17 A I had a Master's and I was working on my PhD
18 at the time.

19 Q Are any of the courses that you taught
09:54 20 between 1979 and 1989, do you think any of those
21 relate to the expertise that you are relying on to
22 give your opinions in this case?

23 MR. STALPES: Objection; vague and form.

24 THE WITNESS: I'm not quite sure I understand
09:54 25 your question.

1 BY MS. STEVENSON:

2 Q Sure.

3 Would you point to any of the courses that
4 you taught between 1979 and 1989 as sources of the
09:55 5 expertise that you are relying on to give your
6 opinions in this case?

7 MR. STALPES: Objection; broad.

8 THE WITNESS: If what you are asking is is there
9 any course material specifically within those courses
09:55 10 that I'm using for my expertise today, the answer is
11 no.

12 BY MS. STEVENSON:

13 Q Now, you received your PhD in 1991; is that
14 right?

09:55 15 A Yes.

16 Q And did you have some post doctoral training
17 there; is that right?

18 A Correct.

19 Q From University of Nebraska?

09:55 20 A Medical Center, yes.

21 Q And tell me about your post doc training.

22 A It's roughly two and a half years for a post
23 doc, and that's basically what it was for this. And
24 it was in the training of neuropharmacology.

09:56 25 Basically looking at how drugs and designing drugs to

1 specifically affect the nervous system. And that
2 was -- pretty much was the type of research that I
3 was conducting at the time.

4 Q Okay. Looks like your dissertation was on
09:56 5 neurobehavioral assessment in offspring of the
6 influence of maternal hypoxia and hypercapnia induced
7 by injection of methadone in pregnant rats.

8 Did I read that correctly?

9 A You read that correctly.

09:56 10 Q Did your PhD, your dissertation concern
11 issues related to risk assessments?

12 A The -- there were courseworks during my PhD
13 that related to risk assessments. The department
14 that I matriculated from was the school
09:57 15 of public health in the division of -- I can't
16 recall. I think they've changed their name in the
17 last ten years, but something like environmental
18 health and safety or environmental and occupational
19 health. The division, I'm not quite sure what the
09:57 20 name is today.

21 And so part of the curriculum was to take
22 coursework in not only toxicology but risk
23 assessment, epidemiology, biostatistics, things
24 along that line.

09:57 25 Q And what about with respect to your

1 dissertation specifically, did that concern any
2 issues related to risk assessment?

3 A The dissertation document itself did not
4 pertain to risk assessment.

09:57 5 Q Did you do any coursework for your PhD that
6 related to arsenic?

7 A Yes.

8 Q What courses did you have that related to
9 arsenic?

09:58 10 A Well, I'll probably repeat myself of what
11 I just mentioned here, but courses in toxicology, for
12 which I took several. There were journal clubs or
13 journal courses, which means that we are provided --
14 students are provided documents to review, such as
09:58 15 studies that are cited in both my report and
16 Dr. Tsuji's report. There are courses in
17 epidemiology that talk about how populations are
18 assessed and evaluated for exposure to both arsenic
19 and lead and a number of other toxicants. There are
09:58 20 courses in biostatistics as well that would talk
21 about the approaches to analyzing datasets, and I
22 recall that there were data for arsenic as well as a
23 number of other toxicants as well.

24 Q Can you tell me about any specific training
09:59 25 that you had during your PhD coursework, other than

1 what you've just described, that related to arsenic
2 toxicology?

3 A Can you be a little bit more specific? I'm
4 not sure I follow you.

09:59 5 Q Sure.

6 I just want to make sure that I understand
7 that if you've gained any particular expertise with
8 respect to arsenic during your PhD coursework that I
9 know what that is. So if there's anything that you
09:59 10 would say, oh, yes, I gained particular expertise on
11 arsenic, you know, taking this class or working on
12 this particular journal project, I just want to know
13 what that is.

14 MR. STALPES: Objection; vague and broad.

09:59 15 THE WITNESS: I think the way that I answered
16 your question previously would be the -- I would
17 repeat my answer.

18 BY MS. STEVENSON:

19 Q Okay.

09:59 20 A There's nothing specifically that I would
21 point back to related to this -- the questions that
22 I was asked to look at in this case that is one
23 particular point --

24 Q Okay.

10:00 25 A -- if I'm answering your question correctly.

1 Q I think we're on the same page.

2 All right. And what about in your post doc
3 training, was there any work that you did during your
4 post doc training that you think gave you any
10:00 5 specific expertise related to arsenic toxicology?

6 A Well, the post doc training focused a lot
7 more on what we call the biochemistry or the
8 pharmacology of chemicals whether they be therapeutic
9 agents or toxicants, whereas my PhD looked more at
10:00 10 the whole animal. So there's -- the idea was to get
11 more expertise on the biochemistry pharmacology.

12 To that degree, my post doc provided a
13 strong basis from which to read studies on
14 biochemistry or how agents are provided to animals,
10:01 15 whether they are, for example, in a bolus or in an
16 inhalation or something along that line. So it
17 provided a lot of guidance and experience in those
18 areas that would apply in general to the issues at
19 hand, at least that I was asked to look at.

10:01 20 Q And other than what you've just described,
21 anything specific that you would point to during your
22 post doc training that helped you understand arsenic
23 toxicology?

24 MR. STALPES: Objection; asked and answered,
10:01 25 broad.

1 THE WITNESS: If what you are asking is there
2 anything specific within my research and time that
3 I'm bringing to the table in my expert report, I
4 would address the same response. It provided a very
10:02 5 strong fundamental basis for which I conduct my
6 practice.

7 BY MS. STEVENSON:

8 Q After your post doc training, did you go to
9 work at Environmental Toxicology International?

10:02 10 A I did.

11 Q And what kind of company was that?

12 A It goes by the acronym ETI. If I may just
13 use that for --

14 Q Sure.

10:02 15 A -- the time being.

16 ETI was a consulting -- toxicology
17 consulting firm. I think, as the name implies,
18 Environmental Toxicology International, ETI, I think
19 embraces the concept of that. The work was to review
10:03 20 risk assessments, conduct risk assessments, conduct
21 toxicological studies. Those are some of the things
22 that the company performed.

23 Q When you were at ETI --

24 How large of a company was ETI when you were
10:03 25 there?

1 A I don't recall specifically, but ballpark
2 figure might be 10 to 14 people, something like that.

3 Q And did you have a particular subspecialty
4 as a toxicologist at ETI?

10:03 5 A Well, when I entered ETI, I did not. I came
6 in as a general toxicologist. The firm conducted a
7 number of types of risk assessments that included
8 contaminated soil risk assessments, the types of risk
9 assessments that are conducted for combustion
10:04 10 sources. So, for example, cement kiln or an
11 incinerator. There were risk assessments for
12 projects where there might be deposition of materials
13 on farmlands and the question was whether or not
14 those -- depositions of those metals, for example,
10:04 15 would be taken up in material for cows or, you know,
16 some farm animal.

17 Those are some of the things that I can
18 recall at the moment.

19 Q Okay. And I think my question was, did you
10:05 20 have a particular subspecialty?

21 A No particular subspecialty that I'm aware of
22 as I started.

23 Q You talked about some of the different
24 projects that ETI worked on as a firm while you were
10:05 25 there just now.

1 A Yes.

2 Q And you mentioned risk assessments on
3 contaminated soils.

4 When you were at ETI, did you work on any
10:05 5 risk assessments related to contaminated soils?

6 A Yes.

7 Q Tell me about those.

8 MR. STALPES: Objection; broad.

9 THE WITNESS: In what way are you asking your
10:05 10 question?

11 BY MS. STEVENSON:

12 Q Sure.

13 At what sites did you work on risk
14 assessments for contaminated soils?

10:05 15 A Boy, I can't recall specific sites offhand.

16 Q What were the soils that you worked on --
17 what contaminants were you conducting a risk
18 assessment for?

19 A In general, they would be metals and
10:06 20 solvents and polychlorinated compounds. I think that
21 kind of covers the major group. Air contaminants.

22 Q What are air contaminants?

23 A I'll give you an example, like benzene,
24 polyaromatic hydrocarbons would be a general
10:06 25 category.

1 Q VOCs?

2 A VOCs would be, semi-VOCs.

3 Q Can you recall any risk assessment that you
4 worked on that was related to the evaluation of
10:06 5 metals in the soils during your time at ETI?

6 A Well, I can remember that I -- metals were
7 common in almost every risk assessment that I
8 conducted. But specifically which ones, I don't
9 recall.

10:07 10 Q Can you recall working on any project during
11 your time at ETI that related to potential arsenic
12 contamination in soils?

13 A Well, arsenic was almost always part of
14 the risk assessment, whether it would have been soil
10:07 15 or -- I'm thinking, for example, with cement kilns,
16 those would always be -- arsenic would always be part
17 of those risk assessments. I can't think of an
18 example where it would not be included.

19 Q Okay. And when you say it's part of the
10:07 20 risk assessment, that doesn't mean that it's the
21 driver of the risk assessment.

22 Is that fair to say?

23 A It depended on the issue, yes. It could be
24 and it could not be.

10:07 25 Q Can you recall any risk assessment that you

1 worked on during your time at ETI where arsenic was
2 the driver of the risk assessment?

3 A I can't recall anything offhand.

4 Q And you worked at ETI from looks like 1992
10:08 5 through 1995.

6 Is that fair to say?

7 A Yes.

8 Q And at some point there you had a position,
9 vice-president marketing and communications.

10:08 10 Do you see that?

11 A I do.

12 Q And that was from 1993 to 1995?

13 A Yes.

14 Q What did that position entail?

10:08 15 A Well, it was a small firm, so sometimes the
16 scientists had other tasks to do to keep -- from the
17 business perspective, in order to maintain business
18 functions. And I apparently was successful in
19 articulating issues related to toxicology; for
10:09 20 example, providing what we called risk communication
21 activities and, therefore, I believe because of my
22 skill over time that was something that I was
23 offered.

24 MR. STALPES: And I don't mean to interrupt, but
10:09 25 you said '93 to '95 is the marketing communications.

1 Is that -- maybe I'm just missing it. I didn't see
2 that here.

3 MS. STEVENSON: That was my question. It says
4 1993, but he was there until 1995.

10:09 5 Q Do you recall the time period you had the
6 position of marketing and communications?

7 A Well, it looks like it's only one year. It
8 was a short period.

9 Q And I would assume in that position you also
10:10 10 had responsibility for marketing the firm to
11 potential clients.

12 Is that fair to say?

13 A Well, marketing -- I think the answer is
14 yes, but it's not I don't think particularly clear
10:10 15 what that particular firm did in terms of marketing.

16 Marketing at that time, as I recall, would
17 include things like publishing papers, providing --
18 helping people publish papers in the firm, helping
19 produce materials for the firm that could be
10:10 20 distributed if -- upon request from a client, kind of
21 review what are the pieces of information that might
22 be useful to provide a good understanding of what the
23 firm's capabilities are.

24 Q Marketing materials, right?

10:10 25 A Well, I'm not a marketer per se, just a

1 scientist, so --

2 Q And then you became the president of
3 Environmental Toxicology in 1993 and kept that
4 position until 1995?

10:11 5 A That's correct.

6 Q How did you become the president of
7 Environmental Toxicology?

8 A I'm not quite sure how I became, but I was
9 offered the position and I decided to accept that
10:11 10 position.

11 Q Who was the president before you?

12 A Well, at the time there was some transition
13 in the firm. At one time there was a woman by the
14 name of Katherine Kelly who I believe started the
10:11 15 firm. Then -- and I don't recall exactly the dates,
16 but ETI was -- not sure if the word "acquired" is the
17 right word, but if you take that from a conceptual
18 basis, a larger firm entered into an agreement with
19 the owners of ETI to become part of a larger firm,
10:12 20 and it's during that period of time I became
21 president.

22 Q What was that larger firm?

23 A The larger firm was ERM is the acronym, and
24 I believe they are out of Pennsylvania.

10:12 25 Q And ERM acquired ETI; is that right?

1 A Well, I don't really know the specifics of
2 what the terms of art are in that transaction. I was
3 not an owner, so I wasn't privy to it.

4 Q Did you -- did ERM acquire or become
10:12 5 involved with ETI before -- while you were still
6 there?

7 A Yes.

8 Q And so when you were the president of ETI,
9 ETI had some relationship with ERM.

10:12 10 Is that fair to say?

11 A Yes.

12 Q But you are not clear on what that
13 relationship was?

14 A Well, it became clear as time moved on.
10:13 15 ERM became the owner and ETI was incorporated in some
16 way. Whether it's part of the whole organization or
17 some other business arrangement, that I can't -- I
18 don't recall.

19 Q Okay. And where did Ms. Kelly go? Did she
10:13 20 leave ETI?

21 A She did leave ETI.

22 Q Where did she go?

23 A She -- I believe she's in Nevada at that
24 point.

10:13 25 Q Do you know where she went at the time she

1 left?

2 A There was a transition, as I recall, from
3 ETI to a firm where she and I worked together for a
4 period of time, and then she moved on to Nevada.

10:14 5 Q What firm was that?

6 A It's Intertox.

7 Q Okay. So were you working for Intertox at
8 the same time you were working for ETI?

9 A No.

10:14 10 Q Did Ms. Kelly start the firm Intertox?

11 A No.

12 Q Who started the firm Intertox?

13 A I did.

14 Q When did that happen?

10:14 15 A In 1995.

16 Q And what did Ms. Kelly do from 1993 to 1995?

17 A You would have to ask her.

18 Q You don't know?

19 A Well, she was, during that period of time,
10:14 20 part of ETI to some degree, but you would have to ask
21 her specifics.

22 Q Was there anything else that contributed to
23 the change in management of ETI when you became the
24 president?

10:14 25 MR. STALPES: Objection; foundation.

1 THE WITNESS: I'm not sure I follow your
2 question.

3 BY MS. STEVENSON:

4 Q Sure.

10:14 5 Were there any other reasons why you took
6 over management from Ms. Kelly at ETI --

7 MR. STALPES: Same objection.

8 BY MS. STEVENSON:

9 Q -- in 1993?

10:15 10 A Again, the best of my recollection was that
11 the ERM management -- and again, I don't remember the
12 specifics so I will just --

13 My best recollection is with ERM, and
14 whoever else, provided me the opportunity to leave
10:15 15 ETI at that time.

16 Q And why did you leave ETI to start Intertox?

17 A I had an opportunity to start a business and
18 one where my professional goals and interests and
19 philosophy allowed me to practice as an independent
10:16 20 toxicologist in a way that other organizations, at
21 least from my limited, did not allow me to practice?

22 Q And were there specific goals or things
23 you wanted to do in your toxicology practice that you
24 had not been able to do at ETI?

10:16 25 A I'm not sure how to exactly answer that

1 question. Could you rephrase that, please?

2 Q Sure.

3 I mean, you just said you wanted to start
4 this new Intertox business because it was going to
10:16 5 allow you to practice as an independent toxicologist
6 in the way that you felt you wanted to practice
7 toxicology; is that right?

8 A Yes.

9 Q And so what were the ways that you were able
10:16 10 to do that that you say you had not been able to do
11 it at ETI?

12 A Well, I think, for example, the questions
13 that I was asked in this particular case was to say,
14 you know, look at this risk assessment, provide an
10:17 15 independent expert opinion on it, which I did.

16 Q Is that something you would not have been
17 able to do at ETI?

18 A I think the answer is no on that, but under
19 a larger management structure, when it became part of
10:17 20 a larger organization, I think it became not -- it
21 just became a little bit more structured in a way
22 that I didn't really understand, never having been
23 part of a big organization before.

24 Q You preferred the flexibility of working at
10:17 25 a smaller company.

1 Is that what you are saying?

2 A I much prefer the flexibility at a smaller
3 company, and I -- I find it less bureaucratic. Let's
4 put it that way.

10:18 5 Q When you were the president of ETI, did you
6 have responsibilities other than simply doing the
7 science?

8 A Yes.

9 Q What kind of responsibilities?

10:18 10 A Well, it would be for the overall
11 organization of the company. I think traditional
12 roles of the president of an organization. It was
13 mixed with continuing to conduct work, as well
14 practicing my craft.

10:18 15 Q How much time percentagewise would you say
16 you spent on actually doing scientific work versus
17 management and other responsibilities when you were
18 the president of ETI?

19 A I don't recall exactly, but I believe
10:19 20 that -- I mean, with only 14 people or whatever
21 it was at the time, ten people or eight people, it's
22 a relatively small management group to deal with. So
23 most of the time was practicing.

24 Q All right. And in 1995, you started
10:19 25 Intertox; is that right?

1 A Yes.

2 Q Okay. And you have worked at Intertox
3 consistently since 1995?

4 A I have.

10:19 5 Q You have two companies under here, Intertox,
6 Inc. and Intertox Decision Sciences.

7 Do you see that?

8 A Yes.

9 Q Well, why don't you first tell me what
10:19 10 Intertox is.

11 A Intertox is a toxicology and research
12 consulting -- let me restate that.

13 It's a toxicology consulting and research
14 organization.

10:20 15 Q How many people work at Intertox?

16 A I think as of today, I have eight to ten
17 people.

18 Q And has that been true since you started
19 Intertox in 1995?

10:20 20 A What part is true?

21 Q That eight to ten people on staff?

22 A No. It's grown, it's contracted for various
23 reasons.

24 Q When you started Intertox, how many people
10:20 25 did you have?

1 A I think I had three at the time.

2 Q And were you one of those?

3 A Yes.

4 Q Okay. And Ms. Kelly?

10:20 5 A Ms. Kelly for a period of time.

6 Q And who was the third?

7 A I don't recall her name. But kind of a

8 staff person that conducted kind of spreadsheets and

9 did research, literature searches.

10:21 10 Q And what is the largest number of people

11 you've ever had at Intertox?

12 A I'm not quite sure. It might be 15,

13 maybe 16.

14 Q Would it be accurate to say that between

10:21 15 1995 and today, Intertox has varied between three and

16 16 employees over time?

17 A What was your date period?

18 Q 1995 to today.

19 A Yes.

10:21 20 Q Now, what is Intertox Decision Sciences?

21 A So Intertox Decision Sciences is a company

22 that basically takes -- produces -- doesn't produce.

23 It acquires scientific content, places it in

24 databases, and that that scientific content is then

10:22 25 available for clients. And the type of data are data

1 related predominantly to risk assessment.

2 Q And is it focused on any particular type of
3 contaminant?

4 A Its current focuses are on materials that
10:22 5 are called -- that are what we call nano sized. So
6 it's related to nanotechnology.

7 Q Does the database have any data on arsenic?

8 A Not that I can recall.

9 Q What about other metals?

10:22 10 A I'm sure that it does have other
11 information, as many of the materials use catalysts
12 to produce it, like nickel and cadmium for sure.

13 Q Is it data that is focused on nanomaterials
14 as used in products?

10:23 15 A It has a wide range, yeah.

16 Q Does any of it focus on nanomaterials as
17 they would relate to environmental contamination?

18 A The -- in a general sense, the answer is
19 going to be yes.

10:23 20 Q And what does that mean? I mean, do
21 nanomaterials contaminate the environment in a way
22 that, say, metals could?

23 A Yes.

24 Q How so?

10:23 25 A If a material, a product -- let me just say

1 if this paper cup had a nanomaterial and then you put
2 it into a garbage can and then it goes to a landfill,
3 that then potentially could contaminate soil or water
4 or something like that. So that -- that's how you
10:24 5 get it, which would be similar to all risk
6 assessment.

7 Q Okay. Do you consider nanomaterials to be a
8 specialty of yours?

9 A It's certainly one area that I have a good
10:24 10 understanding.

11 Q Other than ETI and Intertox, have you worked
12 for any other organization since you received your --
13 well, let me --

14 Setting aside your teaching positions, other
10:24 15 than ETI and Intertox, have you worked for any other
16 organization since you received your PhD in 1992?

17 A The way that -- the answer's yes.

18 Q And what organizations have you worked for?

19 A So from time to time, I've been asked to
10:25 20 perform certain tasks. So for example, the U.S. EPA
21 has me as one of their -- and I don't recall exactly
22 what it is. It may be in my CV here -- part of their
23 external review of certain toxicological issues. And
24 in that way, as I recall, I get a, at the end of the
10:25 25 year when I do those, something like a 1099 or I get

1 something that it's not Intertox that's been hired,
2 it's me that's been hired. So things along that
3 line.

4 But those are, you know, one time or --
10:25 5 I mean, it's repeated maybe from one year to another
6 year. And I believe I'm still on -- I believe I'm
7 still on the EPA -- I'm available and I believe I've
8 got all of the paperwork in for the EPA on this
9 issue. But that's my recollection.

10:26 10 Q Any other organizations that you can recall
11 now along those lines?

12 A I don't recall one but they would tend to be
13 organizations that are nonprofit or governmental, to
14 the best of my recollection.

10:26 15 Q Talk about your teaching positions.

16 You have on your resume that you have been
17 an adjunct professor, University of Nebraska Medical
18 Center from 1999 to the present; is that right?

19 A Yes.

10:26 20 Q And at the University of Nebraska Center for
21 Environmental Toxicology from 2002 to the present; is
22 that right?

23 A Yes.

24 Q How many courses have you taught at
10:27 25 University of Nebraska in either of those

1 departments?

2 A I haven't taught any courses. I've given
3 lectures.

4 Q How many lectures have you given?

10:27 5 A I think somewhere around -- roughly
6 somewhere between five and ten is my best
7 recollection.

8 Q Between 1999 and the present?

9 A Yes.

10:27 10 Q And have those --

11 Have the topics of those lectures varied or
12 have they been focused on one topic?

13 A They vary.

14 Q Have you given any lectures on risk
10:27 15 assessment?

16 A I gave a lecture on risk assessment, the
17 general principles of it, yes.

18 Q Any others on risk assessment?

19 A Can you be more -- can you rephrase that?
10:28 20 I'm not quite sure I followed.

21 Q Yeah. Besides the one lecture on the
22 general principles of risk assessment, have you given
23 any other lectures on risk assessment at University
24 of Nebraska?

10:28 25 A Not that I can recall.

1 Q Have you given any lectures at University of
2 Nebraska on metals?

3 A Yes.

4 Q Which metals?

10:28 5 A All of the heavy metals and others, as well
6 in a general -- in a course -- in a lecture, excuse
7 me.

8 Q Have you given any lectures on arsenic?

9 A Arsenic was included in that.

10:28 10 Q How many lectures did you give on heavy
11 metals?

12 A I don't recall.

13 Q Can you recall the subject matter of any
14 of the lectures that you gave on heavy metals?

10:28 15 A The subject matter?

16 Q Yes.

17 A For example, if you are asking did I talk
18 about mercury, arsenic, lead, or is there something
19 else you are looking --

10:29 20 Q Or in what context were you talking about,
21 toxicity or sampling protocols or --

22 A Okay. Mostly it was related to what we
23 would call the toxicokinetics, the pharmacology,
24 although that's more toxicology in this case. It
10:29 25 would include information about outcomes,

1 symptomatology, speciation of metals and how they
2 influence toxicity. Those would be the general types
3 of information I provided.

4 Q Are there any lectures that you've given in
10:29 5 your work as an associate professor at University of
6 Nebraska that you think inform any of your opinions
7 that you are giving in this case?

8 A No.

9 Let me just make sure I understood your
10:30 10 question. If what you are asking me is if there's
11 anything in that coursework that somehow I'm bringing
12 to this particular work as we sit here today, is that
13 what you are asking?

14 Q Yes.

10:30 15 A No.

16 Q Let's look at your specific project work
17 that you have listed on pages A-3 through A-13 of
18 your CV.

19 Does this list of your project experience
10:30 20 omit any significant projects that you've worked on?

21 A Well, I'm not quite sure what you mean by
22 "significant projects." It is a -- it's certainly
23 selected projects. Your interpretation of what might
24 be significant and mine might be different, so I
10:31 25 don't mean to mislead you on that.

1 Q What was your basis for choosing to list a
2 project on here?

3 A I think in general the way that I approached
4 it was to provide, I think, a couple of things.

10:31 5 One would be to demonstrate expertise in
6 both toxicology and risk assessment for a number of
7 different environmental toxicants, whether they be
8 metals or air pollutants. Excuse me. Air
9 pollutants, volatile organic compounds, et cetera.

10:32 10 Another purpose was to demonstrate
11 experience with what we call exposure pathways,
12 meaning how could a human become exposed to it.

13 Another reason I can recall would be to
14 demonstrate my familiarity with both federal and, in
10:32 15 some cases, state regulatory understanding in risk
16 assessment.

17 Those are some of the ways. Those are some
18 of the reasons that I chose the examples that are in
19 my CV.

10:32 20 MR. STALPES: Shannon, we've been going about an
21 hour. Do you mind if we take five and refill on
22 water and whatnot?

23 MS. STEVENSON: No. Sounds good.

24 THE VIDEOGRAPHER: Going off the record. The
10:33 25 time now is approximately 10:33 a.m.

1 (Off the record.)

2 THE VIDEOGRAPHER: Going back on the record.

3 The time now is approximately 10:46 a.m.

4 BY MS. STEVENSON:

10:45 5 Q Dr. Pleus, continuing to look at your CV
6 that's in front of you, looking at the "Select
7 Project Experience" section, your first section you
8 have there called "Air," and what do you mean by
9 projects related to air?

10:45 10 A This would be an example of projects -- or
11 these would be examples of projects where somehow the
12 contaminant of concern was in air for a significant
13 component. Doesn't exclude other pathways, but that
14 would be one way.

10:46 15 Q Okay. Let me have you -- let's see.
16 On the first page there under "Air," your
17 first project is "Assessed human health risk of
18 workers in a facility that was being built to
19 decommission chemical warfare agents."

10:46 20 Do you see that?

21 A I do.

22 Q And if you look down to the second to last
23 bullet, there's a description there that looks very
24 similar.

10:46 25 Is that the same project?

1 A It is.

2 Q Okay.

3 A I think it is. Just let me just
4 double-check.

10:46 5 Q Sure.

6 A Yes, that one looks to be the same, although
7 that project did have two components to it.

8 Q That's just an inadvertent repetition?

9 A That would be my guess.

10:47 10 Q Okay. In this section I notice that you
11 have listed a lot of projects related to cement
12 plants; is that right?

13 A I do believe that there are a number of
14 those. Whether they predominate, I'm not quite sure.

10:47 15 Q Right.

16 And in those descriptions, for instance, if
17 you look at the third project listed under "Air," it
18 mentions chemicals of concern including metals and
19 then it says including arsenic and other metals.

10:47 20 Do you see that?

21 A I do.

22 Q For the cement plant projects that you have
23 worked on, has arsenic ever been the primary
24 contaminant of concern?

10:48 25 A It's been an important contaminant of

1 concern.

2 Maybe I'm not quite sure I follow your
3 question. Could you just either repeat it or
4 rephrase that, please.

10:48 5 Q Sure.

6 In your work on different cement plants, has
7 arsenic ever been the primary contaminant of concern?

8 A And do you mean by "primary" -- can you
9 define it, please?

10:48 10 Q The most significant contaminant that you
11 are looking at with respect to that project.

12 A And when you mean "the most significant,"
13 I'm just trying to understand --

14 Q Sure.

10:48 15 A -- are you saying the only contaminant?

16 Q No.

17 A Could you explain a little bit better,
18 please.

19 Q How about this: Have you worked on any
10:48 20 cement facilities where arsenic was the driving
21 factor, for instance, in a risk assessment?

22 A I don't recall whether in any one of the
23 many cases that I looked at. I do know that it was
24 assessed in -- I can't think of an exclusion where
10:49 25 arsenic was not assessed, let's put it that way.

1 Q Is it fair to say that in approaching
2 projects as a toxicologist, there are often a number
3 of potential contaminants that you are looking at?

4 A It depends on the case. There are cases
10:49 5 where there are up to 80 constituents of concern.
6 There are some cases where it's one.

7 Q And when you have situations where you have,
8 say, 80 constituents of concern, do some of those
9 tend -- usually tend to become the more important
10:50 10 constituents of concern?

11 A Can you rephrase that, please?

12 Q Sure.

13 When you have a situation where you are
14 looking at 80 constituents of concern, do actions
10:50 15 usually end up being taken based on a smaller number
16 than 80 of the constituents?

17 A If what you are asking, let's say out of 80
18 are there several that become the most significant,
19 sometimes we use the word driver of the risk. That
10:50 20 number is generally a subset, a smaller subset of the
21 entire number of chemicals that we would be looking
22 at.

23 Q Was arsenic a driver of a risk assessment
24 at any of the cement plants that you looked at or
10:51 25 worked on?

1 A Again, I don't recall whether there was --
2 I don't recall.

3 Q Is there a constituent of concern that is
4 usually the driver of risk assessments at cement
10:51 5 plants?

6 A There are some constituents that are, as
7 I recall in general, quote, unquote, drivers of risk
8 assessment.

9 Q For cement plants?

10:51 10 A For cement plants, yeah.

11 Q What would those be?

12 A Well, some of the metals, arsenic being one
13 of them, but other metals as well. And dioxins and
14 furans as well, and there are a number of isomers as
10:51 15 those. Get those as a general categories. I think
16 some of the chlorinated hydrocarbons can also
17 contribute.

18 Q As we sit here today, can you identify any
19 cement kiln project that's listed in your CV where
10:52 20 arsenic was the driver of a risk assessment?

21 A If I understand your question, is any cement
22 kiln?

23 Q Correct.

24 A I can't point to one out of this list.

10:52 25 Q Do you know if there was one?

1 A I can't recall at this moment.

2 Q Have you flip to the next page, A-4, of your
3 CV. About the middle of the page there, there's a
4 project says, "Conducted a toxicological assessment
10:52 5 of residents living nearby a lead smelting and
6 refining operation."

7 Do you see that?

8 A I do.

9 Q What site was that?

10:53 10 A I'm trying to recall exactly, but I believe
11 it's either one in Everett, Washington or one in
12 Omaha, Nebraska.

13 Q Are those two different lead smelter sites
14 that you have worked on?

10:53 15 A Yes.

16 Q When was the Everett, Nebraska project?
17 Excuse me. Everett, Washington project?

18 A I believe it was in the mid '90s. Let me
19 be a little more specific since -- I think it's
10:54 20 somewhere between '95 and '99. That's my best
21 recollection.

22 Q And what about the project in Omaha,
23 Nebraska?

24 A I believe it's the same period of time, but
10:54 25 I don't recall exactly.

1 Q Were you the primary person from Intertox
2 that worked on those sites?

3 A Yes, I believe so.

4 Q And did you conduct a toxicological
10:54 5 assessment for residents living near each of those
6 smelter sites?

7 A The term risk assessment might be a little
8 different for each of the cases in that one was more
9 specific questions, as I recall, and the other was a
10:55 10 human health risk assessment.

11 Q Do you remember which one was the human
12 health risk assessment?

13 A The Omaha.

14 Q And what were the drivers of the
10:55 15 constituents of concern that you addressed in that
16 risk assessment?

17 A My recollection is lead and arsenic.

18 Q And do you recall which one of those,
19 if either, ended up being the driver of that risk
10:55 20 assessment?

21 A I don't, although I know both were evaluated
22 concurrently. I think of the two, lead may have been
23 a stronger driver, but the end points are different
24 and their calculations, as you know, are different.

10:56 25 Q Who hired you to perform the human health

1 risk assessment in Omaha?

2 A It was a law firm.

3 Q This was related to litigation?

4 A Yes.

10:56 5 Q And who was the law firm representing?

6 A It was representing, as I recall, the
7 plaintiffs.

8 Q Do you recall the name of that case?

9 A I don't.

10:56 10 Q Do you recall who the defendants were?

11 A The defendant -- I don't recall all of them,
12 but I believe the facility was an ASARCO facility, if
13 that answers your question.

14 Q An ASARCO lead smelter?

10:56 15 A I don't recall the details of that.

16 Q So this was a litigation project.

17 Is that fair to say?

18 A Correct.

19 Q Did you prepare an expert report in that
10:57 20 case?

21 A I assume I did, but I don't recall.

22 Q Do you recall whether you had your
23 deposition taken in that case?

24 A That's what I'm trying to recall and it's
10:57 25 been a while and I don't recall.

1 Q Where was the case filed?

2 A Not positive, but maybe Nebraska.

3 Q And do you recall the general nature of the
4 opinions that you gave in that case?

10:57 5 A Can you be more specific?

6 Q Sure.

7 Did you give opinions in that case that
8 plaintiffs were exposed to contamination?

9 A Yes.

10:57 10 Q And what contaminants were they exposed to,
11 in your opinion, that you gave?

12 A Lead and arsenic.

13 Q And did you make any recommendations with
14 respect to that exposure in that case?

10:58 15 A What do you mean by "recommendations"?

16 Q Did you make any recommendations as to what
17 the remedy plaintiffs should receive should be?

18 A I don't recall.

19 Q Was there an EPA risk assessment that had --
10:58 20 human health risk assessment that had been done in
21 that case?

22 A I don't believe that that's the case. But
23 again, it's been a while.

24 Q Did you evaluate exposure to arsenic in
10:58 25 residential soils in that case?

1 A Residential soils was one of the components
2 of it, yes.

3 Q Do you recall the other components?

4 A Air, other pathways, as I recall.

10:58 5 Q Was the smelter operating?

6 A I don't recall if it was operating at the
7 time, but I believe it may have been.

8 Q Okay.

9 A I do recall looking at air data. This is
10:59 10 very -- and if it wasn't operating, it was very
11 shortly after it but it could very well be operating.

12 Q Do you recall the law firm that you worked
13 for in that case?

14 A The law firm that asked me to conduct my
10:59 15 investigation is a law firm by the name of Riddell,
16 Williams.

17 Q Are they in Nebraska?

18 A No.

19 Q Where are they?

10:59 20 A Seattle.

21 Q All right. Let me have you, if you look on
22 page A-5, roughly the -- about the same distance down
23 the page, fourth bullet down, there is a project
24 description there I think is identical to the one we
10:59 25 were just looking at, "Conducted a toxicological

1 assessment to residents living nearby a lead smelting
2 and refining operation."

3 A Yes, I see that.

4 Q Do you know if that's the same project or a
11:00 5 different project?

6 A Well, as I mentioned there's two, and the
7 wording is very similar. But I think it refers to at
8 least one -- one or the other.

9 Q So let's talk about the Everett, Washington
11:00 10 smelter.

11 Who operated that smelter?

12 A As I recall -- when you say "who operated,"
13 it's the same question you asked me earlier?

14 Q I don't know what you are referring to.
11:00 15 Who was the operator of the smelter in
16 Everett, Washington?

17 A The company that operated it?

18 Q Yes.

19 A My best recollection was that it's ASARCO.

11:00 20 Q That's true for Omaha and for Everett?

21 A Yes.

22 Q And it was a lead smelter; is that right?

23 A To the best of my recollection.

24 Q And was the Everett, Washington matter also
11:01 25 a litigation matter?

1 A It was.

2 Q Was that case filed in the State of
3 Washington?

4 A Yes.

11:01 5 Q And did you work for the plaintiffs in that
6 case as well?

7 A The plaintiff was the attorney general for
8 the State of Washington, as I recall.

9 Q And what were the nature of the claims in
11:01 10 the case?

11 A I don't recall specifically, but I believe
12 it had to do with the discovery of soil and
13 contaminants related to the operation. And this
14 facility was not operating, as I recall right now.

11:02 15 Q I assume discovery of contaminants in the
16 soil?

17 A Close to or near the site.

18 Q And were you hired by the attorney general
19 in that case?

11:02 20 A Yes.

21 Q And what work did you do for that case?

22 A Well, as it says, I looked at exposures,
23 exposure pathways, toxicology, laboratory data to
24 whatever I was provided.

11:02 25 Q And lead and arsenic were constituents of

1 concern?

2 A They were --

3 Q And --

4 A -- to the best of my recollection.

11:02 5 Q Did one of those end up being the driver of
6 your risk assessment?

7 A I don't recall on that one.

8 Q Do you recall what opinions you gave in that
9 case?

11:02 10 A Not specifically I don't, no.

11 Q Did you evaluate exposure to lead and
12 arsenic through residential soil in that case?

13 A I believe so, but I'm not -- I believe that
14 that's -- that would be the case, yes. But I don't
11:03 15 recall the specifics of it.

16 Q Do you recall whether you gave an opinion
17 that residents were exposed to lead and arsenic
18 through their residential soil?

19 A Yes.

11:03 20 Q You did give that opinion?

21 A To the best of my recollection. I don't
22 recall -- I think -- let me make sure I'm
23 understanding your question.

24 Your first question was a certain thing and
11:03 25 then your question you are saying specifically soils

1 and people. In every risk assessment that I conduct
2 has to do with some human population and some
3 exposure. So would soils have been a part of that,
4 if that's what you are asking, part of that risk
11:03 5 assessment, the answer's yes, of course it would be
6 part of that risk assessment. And that's what I'm
7 answering.

8 Q Was soil considered to be -- residential
9 soil considered to be a dominant pathway for that
11:04 10 risk assessment?

11 A It would certainly be a significant pathway.
12 Whether it's the dominant, I can't recall.

13 Q And do you recall any specific investigation
14 that you did with respect to exposures from
11:04 15 residential soil in that case?

16 A Can you be more specific, please?

17 Q Sure.

18 Did you do soil sampling, did you review
19 soil sampling, did you do any biomonitoring? What
11:04 20 did you do to evaluate whether there was exposure to
21 lead and arsenic through residential soils in that
22 case?

23 A So this was a risk assessment. And so data
24 were provided to me and a risk assessment was --
11:04 25 using the standard approach to risk assessment was

1 conducted as opposed to a biomonitoring study or
2 whatever else you mentioned.

3 Q And is that the same for the Omaha, Nebraska
4 work that you did?

11:05 5 MR. STALPES: Objection; vague.

6 THE WITNESS: I just want to make sure I'm
7 answering your question. Could you just rephrase
8 your whole question for the Omaha, Nebraska one?

9 BY MS. STEVENSON:

11:05 10 Q Sure. Let me ask a slightly different
11 question.

12 Going to the Omaha, Nebraska project, was
13 exposure to residential soils a dominant pathway that
14 you considered in that project?

11:05 15 A Well, I don't recall exactly, but the -- it
16 was certainly a significant pathway. Whether it was
17 dominant or not, I cannot recall.

18 Q And on the Omaha, Nebraska project, data
19 were provided to you; is that correct?

11:05 20 A Yes.

21 Q Did you do any data collection yourself?

22 A By "data collection," can you be more
23 specific?

24 Q Soil sampling, air sampling, biomonitoring?

11:06 25 A I did not do that.

1 Q And as I understand it, you in the Everett,
2 Washington case received data and using that data,
3 you conducted a risk assessment under EPA guidelines.

4 Is that accurate?

11:06 5 A That's overall accurate. In other words,
6 I conducted an assessment using the risk assessment
7 approach, the standard approach to risk assessment,
8 yes.

9 Q And is that the same in the Omaha, Nebraska
11:06 10 case?

11 A Yes. I would follow the same guidelines.

12 Q And do you recall the outcome of the Omaha,
13 Nebraska case?

14 A Could you be more specific?

11:06 15 Q Yes.

16 Did the case settle, did it go to trial, who
17 won?

18 A I don't know the answer to that question.

19 Q And what about the Everett, Washington case?

11:07 20 A I believe there was some settlement at some
21 point, but I wouldn't have been involved with that.
22 But that's my best recollection.

23 Q Did you acquire any experience specific to
24 arsenic in your work on either the Omaha, Nebraska
11:07 25 case or the Everett, Washington case?

1 MR. STALPES: Objection; vague.

2 THE WITNESS: Can you be more specific? What
3 acquired knowledge?

4 BY MS. STEVENSON:

11:07 5 Q Sure.

6 Is there any knowledge that you acquired
7 about arsenic in working on those matters that would
8 be relevant to your expert opinion that you are
9 giving in this case?

11:07 10 MR. STALPES: Same objection.

11 THE WITNESS: It sounds similar to the questions
12 you were asking me before. In other words, is there
13 something particular that I'm pulling out of that
14 case that's relevant to the questions that I was
11:08 15 asked in this case.

16 Am I understanding you correctly?

17 BY MS. STEVENSON:

18 Q Yes.

19 A Nothing specific, but the general process
11:08 20 is similar, the issues have similarity. They are not
21 exact, but they have similarities. The approach is
22 EPA approach. Those things are similar, but there's
23 nothing that I could pick out and say, aha, that
24 influences or provided sufficient information in this
11:08 25 case or what I was asked in this case.

1 Q Have you look at page A-10 of your CV. You
2 have a section here related to soil?

3 A Yes.

4 Q And it has two projects listed under it.
11:09 5 Is that fair to say?

6 What do you mean by the description "Soil"?

7 A Well, in these cases, the predominant --
8 let me go back and say, the purpose was to again
9 demonstrate areas where a particular case had a focus
11:09 10 and so these cases would provide evidence of that.
11 That doesn't exclude what I said about air. In other
12 words, soil may be contaminated by a combustion
13 source and soil would be evaluated. But these are
14 cases where the focus was on the contamination of
11:10 15 soil.

16 Q Other than the two cases that you've listed
17 here, are there any other cases that you've worked on
18 where you would say soil was the primary focus?

19 A Soil has always been an important pathway,
11:10 20 and so much of the examples in the "Air" would add to
21 that.

22 Q Are there any other cases besides the two
23 that you've listed under "Soil" that you worked on
24 where soil would be the primary focus?

11:10 25 A There are other cases that we -- that I

1 have worked on, but they don't provide any particular
2 unique component. Whereas my impression was that
3 these provide some unique component of it because of
4 the one case, arsenic and chrome (VI) were
11:11 5 constituents of concern, and the other one was a
6 wood-treating facility where other compounds would be
7 concerned in addition to metals.

8 Q Can you identify for me any specific
9 projects that you've worked on where soil was the
11:11 10 primary focus other than the two you've listed here?

11 MR. STALPES: Objection; asked and answered.

12 THE WITNESS: Well, for example, the cement kiln
13 projects would all have soil.

14 BY MS. STEVENSON:

11:11 15 Q Did any of them have soil as a primary
16 focus?

17 A Can you be more specific?

18 Q Was there any one where the bulk of your
19 work or investigation related to exposure to
11:12 20 constituents of concern via soil?

21 A Were there other ones? Yes. Incinerators
22 would be another example.

23 Q And I'm asking you about specific projects.
24 What I want to know is are there any specific
11:12 25 projects that you have not included within this

1 "Soil" section where soil was the primary focus of
2 your investigation?

3 A Yes. I see your question.

4 There are some, but I have not listed them
11:12 5 and I don't recall offhand.

6 Q Let's talk about the two that you have
7 listed.

8 The first one is "Conducted field research
9 on workers in wood treatment facilities to copper
11:12 10 chromium arsenate."

11 Where was this project?

12 A I think, the best of my recollection
13 is it was nationwide, although that's a bit broad.
14 There were facilities, as I recall, in different
11:13 15 states in the U.S. where the -- where these practices
16 were occurring.

17 Q Who did you work for on this project?

18 A I recall that it was --

19 Can you be more specific?

11:13 20 Q Who hired you to do this work?

21 A I don't recall exactly the name, but I think
22 it's a forest products research organization.

23 Q Is that a nonprofit organization?

24 A I don't know.

11:13 25 Q Was it a manufacturer?

1 A They themselves, I don't believe, were
2 manufacturers. But the facilities that we visited
3 obviously would have been manufacturers.

4 Q Were they an industry organization?

11:14 5 A They could have been. I just don't recall.

6 Q What time period was this project?

7 A I believe it was somewhere in the range of
8 1997 to maybe 2003, that period of time.

9 Q Were you the primary person from Intertox
11:14 10 that worked on this project?

11 A I -- no, I had others working on this.

12 Q Do you recall how much time you personally
13 spent working on this project?

14 A I don't.

11:14 15 Q Could you say whether it was more than half
16 or less than half of the total time that Intertox
17 spent working on the project?

18 A I'm sorry. I can't. I don't recall.

19 Q In looking at the description, this is
11:15 20 talking about exposures that workers might receive to
21 CCA.

22 Is that fair to say?

23 A Yes.

24 Q And it talks about airborne exposures.
11:15 25 Do you see that?

1 A I do.

2 Q And it talks about "Route of exposure was
3 primarily via inhalation."

4 Do you see that?

11:15 5 A Yes.

6 Q What was the soil component of this project?

7 A One of the soil components was the material
8 would leach or run off of the treated wood products
9 where the material was stored, and those grounds
11:15 10 became contaminated.

11 Q And those were grounds at the work site,
12 I mean, at the facilities, the wood treatment
13 facility?

14 A They generally were at the facility, yes,
11:16 15 like in a yard or in some land close to the treating
16 facility, including the treating -- you know, the
17 ground in the treating facility as well.

18 Q Was this project litigation related?

19 A No.

11:16 20 Q Do you recall why you were asked to do this
21 investigation?

22 A I think the organization that hired us was
23 interested in understanding what risks there were to
24 their facilities and to potentially their workers.
11:16 25 And others I think that, if I recall, resided close

1 to the facility, so like neighbors.

2 Q What was the final work product that you
3 delivered in this case?

4 A I don't actually recall what that is.

11:17 5 Q Do you recall whether you found the workers
6 were or were not exposed to arsenic in this case?

7 A Well, when you use the word "exposed," I
8 want to make sure I understand what you mean by
9 "exposed." Can you be more -- a little more clear?

11:17 10 Q Did you evaluate whether or not workers were
11 exposed to arsenic in this case?

12 A In other words, did they come in contact
13 with the metal?

14 Q Yes.

11:17 15 A Yes, of course.

16 Q And what was your --

17 And your conclusion was that they were
18 exposed?

19 A Yes, the workers.

11:17 20 Q And do you recall whether you gave an
21 opinion about the nature of that exposure?

22 A I'm sure I did. I don't recall it.

23 Q Do you recall whether you gave an opinion
24 that the workers were subject to any health risks
11:17 25 from their arsenic exposure?

1 A I don't recall in this particular case
2 exactly what the work product was, so I don't know
3 what the questions were that were being asked. But
4 I do believe that that would have been an important
11:18 5 question to be at least reflecting on.

6 Q Do you recall that the route of exposure was
7 primarily via inhalation?

8 A To the workers?

9 Q Yes.

11:18 10 A It's one pathway.

11 Q I mean, in the description it says "Route of
12 exposure was primarily via inhalation."

13 A Primarily, but there were other pathways.

14 Q Do you recall inhalation was the primary
11:18 15 pathway?

16 A It's what I wrote and I assume that that was
17 the major pathway for the workers, yes.

18 Q And do you recall what the source of the
19 constituents of concern that were being inhaled, what
11:18 20 was the source that they were coming from?

21 MR. STALPES: Objection; vague.

22 THE WITNESS: Could you rephrase that? I want
23 to make sure I understand your question.

24 BY MS. STEVENSON:

11:19 25 Q Sure.

1 You say here that the route of exposure to
2 these constituents was primarily via inhalation,
3 correct?

4 A That's what I wrote, yes.

11:19 5 Q The constituents that were being inhaled,
6 where were they coming from, what was their source?

7 A It would be from the treatment of wood
8 products or wood.

9 Q And was the --

11:19 10 Was it coming from the actual chemicals
11 being used to treat the wood, you know, as they were
12 being used in the treatment process?

13 A That would be part of it, yes.

14 Q Were they --

11:19 15 Was there inhalation coming from arsenic
16 that had leached into the soil from the stored wood
17 products?

18 A That, I don't recall. And I would have to
19 go back to look at that, whether or not there were
11:20 20 sufficient -- if there was volatilization of
21 materials. It's entirely possible that there might
22 have been, yes.

23 Q Can you recall, as we sit here today,
24 whether the constituents that were being inhaled
11:20 25 were coming primarily from their use in the facility

1 versus their leaching into the soil?

2 A Well, again, there was some multiple
3 components, and I only address -- one of the reasons
4 I present this in my CV is to help demonstrate
11:20 5 certain attributes for a project. It doesn't include
6 the whole project.

7 As I recall, there were other issues related
8 to this project, related to residents that were
9 living nearby as well, which would be another pathway
11:20 10 to look at.

11 Q Do you recall whether the residents nearby
12 were exposed, if there were concerns that they were
13 exposed to arsenic?

14 A I believe that was one of the chemical --
11:21 15 the constituents of concern.

16 Q And were there concerns that residents
17 nearby were exposed to arsenic in their residential
18 soil?

19 A That, I'm not quite sure how, whether --
11:21 20 what the pathways were or how it migrated off. Might
21 it have gone through some, you know, runoff like soil
22 erosion or something like that. It's been a while
23 since I've looked at that.

24 Q And you can't remember as we sit here today?

11:21 25 A I cannot.

1 Q Look at the other soil project that you have
2 listed, "Comprehensive risk assessment addressing
3 human health risks related to dioxins and PAHs in
4 soil at a wood-treating facility."

11:21 5 Do you see that?

6 A I do.

7 Q Where was that project?

8 A What I recall is this project, and there
9 were I believe two or three that would be represented
11:22 10 by this. Here in the Pacific Northwest, which
11 includes I think Washington and Oregon as locations,
12 but I can at least think of a couple places in
13 Washington where that might apply.

14 Q So you are not sure of the location for --
11:22 15 the particular location for this project?

16 A Let me -- maybe I wasn't clear in saying
17 that there could be two or three projects that I can
18 kind of recall that might apply to this particular
19 bullet point, and I don't recall exactly where those
11:22 20 would be other than I think one location is in the
21 Pacific Northwest.

22 Q Okay. And do you recall who you worked for
23 when you did the projects that are described by this
24 bullet?

11:22 25 A One that I can recall was for a law firm.

1 Q So some of this work was litigation related?

2 A Well, the one that I'm recalling at the
3 moment was.

4 Q And who did the law firm that you were
11:23 5 working for represent?

6 A It represented, I believe, the owner and
7 operator of the facility.

8 Q Do you recall who that was?

9 A The name of the owner?

11:23 10 Q Yes.

11 A I do not recall the name of the owner.

12 Q Do you recall the name of the law firm?

13 A Yes.

14 Q What was that?

11:23 15 A I say yes, and -- it's -- it will come to me
16 in a second. One of the names is Gates.

17 Q K&L Gates?

18 A K&L Gates. Thank you.

19 Q And what time period did you work on these
11:24 20 projects?

21 A I believe somewhere around the mid 2000s.
22 That doesn't -- we're not even at our mid 2000s,
23 sorry. Somewhere between 2000 and I believe 2007.

24 Q Okay. Were you the primary person at
11:24 25 Intertox who worked on these projects?

1 A I was not the primary person, but I was
2 involved. And under my direction.

3 Q Let me have you skip to page A- -- sorry.

4 Do you recall -- I take it arsenic was not
11:25 5 an issue in this project.

6 Is that fair to say?

7 A To the best of my recollection, it was not.

8 Q Was exposure to constituents of concern
9 through soil an issue?

11:25 10 A Yes.

11 Q And was it the primary issue in that case?

12 A When you say "primary issue," can you be
13 more specific?

14 Q Was it the primary pathway you were
11:25 15 assessing in that case?

16 A Well, it was certainly a significant
17 pathway.

18 Q Do you recall what your ultimate opinions
19 were in that case?

11:26 20 A No. It was a -- fairly complex issues
21 that were being raised, so there was specifically
22 requirements to answer questions that were raised,
23 such as clean-up levels or something like that.

24 Q Had a lawsuit been filed by residents in
11:26 25 that area?

1 A I do not know.

2 Q Did you give a deposition in that case?

3 A No.

4 Q Did you prepare an expert report?

11:26 5 A I believe we --

6 When you say "expert report," are you just
7 saying in general?

8 Q I'm thinking of a litigation expert report
9 like the one you did here.

11:26 10 A My recollection was that it wasn't
11 litigation, per se. But it was related to the --
12 I mean, a law firm had asked us to conduct this
13 assessment, but I don't recall it being specifically
14 litigation.

11:27 15 Q Was it part of a regulatory process?

16 A That would be my guess.

17 Q I guess the work was submitted to U.S. EPA,
18 so does that sound correct?

19 A That is correct.

11:27 20 Q Do you recall the conclusions that you
21 reached in the work that you submitted to EPA in
22 that case?

23 A No. As I mentioned, there were several
24 questions that we needed to address, and I don't
11:27 25 recall what those were specifically.

1 Q Looking at page A-12, under the "Ecological
2 Receptors" section.

3 A Yes.

4 Q What do you mean by ecological receptors?

11:27 5 A In general, there are cases where we look
6 at human health, but on occasion we will look at
7 ecological receptors, which mean anything from kind
8 of tertiary organisms or top of the food chain, if
9 you will, organisms like a bald eagle or some
11:28 10 organism like that or deer that might be used for
11 hunting -- that someone would hunt in order to get
12 food to I think an occasion certain types of fish,
13 things along that line. That's what I mean by
14 ecological.

11:28 15 Q So it would be non-human receptors to
16 potential exposure of contaminants?

17 A Yes.

18 Q If you look at the third bullet point under
19 there, it says "Conducted toxicological assessment
11:28 20 for cleanup of lead and arsenic contaminated soil
21 from smelter operating in the 1900s."

22 Do you see that?

23 A Yes.

24 Q Is that your work on this case?

11:29 25 A No.

1 Q What work is that?

2 A That -- well, actually, as I read it, that
3 is in part work that I've done on this case. That's
4 obviously clear. But I believe it also would fit to
11:29 5 the questions in the state attorney general case as
6 well.

7 Q The Everett, Washington case?

8 A Correct.

9 Q In that case, did you conduct historical
11:29 10 toxicological research on articles and records dating
11 back to the 1700s?

12 A Yes.

13 Q So you did that in that case, as well as
14 this case?

11:30 15 A Correct.

16 Q And why is this project listed under
17 "Ecological Receptors"?

18 A In part, because the questions that were
19 being asked were related to farm animals and
11:30 20 organisms related to other forms of consumptions,
21 like hunting. And also the effect on the
22 eco-receptors near facilities that were, you know,
23 lead smelters, copper smelters, things along that
24 line.

11:30 25 Q Looking to the project right below that,

1 "Conducted a toxicological assessment of human health
2 risks from lead deposited in agricultural soil."

3 Do you see that? What project was that?

4 A This is a project that was related to a
11:31 5 steel manufacturing plant, as I recall, in Texas, and
6 that the emissions of the process of making steel was
7 deposited on hay, as I recall. And if it's not hay,
8 it's some other forage that is provided to cattle.

9 Q Was this a litigation matter?

11:31 10 A No.

11 Q Who were you hired by to do this work?

12 A My best recollection was the owners of the
13 facility.

14 Q And did you provide a report in that matter?

11:32 15 A I don't recall.

16 Q When you say the owners of the facility, did
17 you mean the owners of the steel manufacturing plant?

18 A Yes.

19 Q Do you recall what opinions, if any, you
11:32 20 gave to the owner of the plant?

21 A I don't recall, but it was -- the purpose
22 was to investigate the exposure pathway and whether
23 that would lead to cattle. So it was a relatively
24 specific question, whether the cattle -- how much
11:32 25 would it take, for example, given the -- what is

1 understood about the toxicokinetics of the matter
2 into those cows.

3 Q Do you recall whether you concluded that
4 cows were exposed through that pathway?

11:33 5 A I'm sure I did, yes.

6 Q That they were exposed?

7 A Yes.

8 Q And did you --

9 Do you recall if you gave an opinion as to
11:33 10 the significance of that exposure?

11 A I believe I did.

12 Q What was that opinion?

13 A I don't recall.

14 Q Do you recall recommending any changes that
11:33 15 the steel manufacturing plant should make to reduce
16 exposure to the cows?

17 A I don't believe we were asked to do that.

18 Q And do you recall any written work product
19 that you produced in that matter?

11:33 20 A I don't recall. I'm assuming that that's
21 what we did.

22 Q Were you the primary person from Intertox
23 that worked on that matter?

24 A I believe I was a significant person in
11:33 25 reviewing the work, but I was -- I did not -- I

1 didn't do the calculations myself. I had someone
2 else do that.

3 Q With respect to all of the projects that
4 you've listed in your CV, I assume it's fair to say
11:34 5 that you were not the primary person from Intertox
6 who worked on these with respect to at least some of
7 them.

8 Is that fair to say?

9 A Some of them I was what I would call the
11:34 10 person that's responsible for the work to ensure the
11 quality, make sure that the work was done correctly.
12 But I would have others in the firm at my request
13 conduct components of it. So I might ask someone to
14 pull the algorithms together, set up a spreadsheet,
11:35 15 things like that.

16 Q Are there projects listed on here in your
17 project experience that you were not even the
18 supervisor of?

19 A No.

11:35 20 Q Were you the primary person -- I apologize
21 if I already asked this.

22 But were you the primary person who worked
23 on the Everett, Washington matter?

24 A Can you be more specific?

11:35 25 Q Sure.

1 On your work related to the lead smelter in
2 Everett, Washington, were you the primary person from
3 Intertox that worked on that matter?

4 A Oh, yes.

11:35 5 Q And what about with respect to the lead
6 smelter in Omaha, Nebraska?

7 A I was.

8 Q Let me ask you about the last bullet that
9 you have listed under "Ecological Receptors." It
11:35 10 says "Conducted human and ecological risk management
11 from the effects copper slag leachates."

12 Do you see that?

13 A I do.

14 Q Where was this project?

11:36 15 A This project I believe was in Tacoma,
16 Washington.

17 Q And approximately when did you work on this
18 project?

19 A This was probably around the 1993, '94, '95
11:36 20 time period.

21 Q While you were at ETI?

22 A Yes.

23 Q Who did you work for or who hired ETI to do
24 this work?

11:36 25 A The best of my recollection was a law firm.

1 Q Was it a litigation matter?

2 A Yes, I do believe that it was litigation.

3 Q Who did the law firm represent?

4 A I'm not positive, but I believe it may have
11:37 5 been owners of the -- some owners or maybe a group of
6 owners or a single owner in -- that was in the Tacoma
7 Harbor area.

8 Q Owners of what?

9 A That's what I don't recall.

11:37 10 Q Were they the alleged polluters or were they
11 people who were allegedly exposed to the pollution?

12 A That's a good question. They weren't the
13 polluters, that I can recall. My best recollection
14 was that they had received slag, that it was placed
11:37 15 on their property and that that was the source of
16 contamination. But again, that's been quite a while.

17 Q Were you the primary person at ETI that
18 worked on this matter?

19 A No.

11:37 20 Q Who was?

21 A I believe it was -- I can't recall his last
22 name. His first name is Gary Pascoe.

23 Q How much work did you do on this project?

24 A I don't recall the amount of work.

11:38 25 Q And sorry. Do you recall the law firm that

1 was involved in this matter?

2 A Not specifically. I have a guess, but I
3 think it's a guess.

4 Q Okay. What is your guess?

11:38 5 A Lane Powell.

6 Q Is that a Seattle firm?

7 A I know they have an office here in town.

8 Q Do you recall whether ETI prepared an expert
9 report in this matter?

11:39 10 A I'm assuming so, but I don't recall.

11 Q Do you recall what ETI -- any opinions that
12 ETI had as a result of its work on this matter?

13 A I don't.

14 Q Going down to -- actually, let me ask you
11:39 15 this.

16 Of the projects listed in your "Select
17 Project Experience," are there any that you would
18 describe where you obtained significant experience
19 related to arsenic?

11:39 20 MR. STALPES: Objection; broad and vague.

21 THE WITNESS: Can you be -- can you rephrase the
22 question? I'm not sure I follow.

23 BY MS. STEVENSON:

24 Q Sure.

11:40 25 I mean, if you were going to convince a jury

1 that you had expertise on arsenic, are there any
2 particular projects that are listed in this "Select
3 Project Experience" that you would point to to
4 demonstrate your experience with arsenic?

11:40 5 MR. STALPES: Object to the form.

6 THE WITNESS: If I understand your question
7 correctly, are there projects in here that provide
8 experience in conducting risk assessment and risk
9 assessment with arsenic? I think there's many, many
11:40 10 that do that.

11 BY MS. STEVENSON:

12 Q Okay. Are there any specific ones you would
13 point to as -- well, let me ask a slightly different
14 question.

11:40 15 If you were going to choose the three
16 projects on here that focused most specifically on
17 risk assessment related to arsenic, which ones would
18 they be?

19 MR. STALPES: Object to the form.

11:41 20 THE WITNESS: Well, if what you are asking is
21 which of these provide a significant source of
22 information on arsenic, outside of all of my other
23 approaches to gathering knowledge on this, you know,
24 there's -- I can't recall how many risk assessments
11:41 25 that I've done for cement kilns or combustion

1 sources, but, you know, 20 or 30 or 40, something
2 like that. Maybe even more than that.

3 There are cases resulting in wood treatment
4 that some of those have -- again several of those
11:41 5 would have arsenic as a component of the risk
6 assessment. You know, I could put the two cases that
7 you asked me about with Omaha and ASARCO, that would
8 be an example of a third group.

9 So I'm -- not specific cases but groups of
11:42 10 cases.

11 BY MS. STEVENSON:

12 Q Any others?

13 A Those are the three that -- those are the
14 three that I have, that I can -- three groups that
11:42 15 I can think of.

16 Q Is there any project listed in your select
17 project experience here where arsenic was the primary
18 constituent of concern?

19 A I can't recall. I mean, sometimes there was
11:43 20 one or two and arsenic was one of the two. But I
21 can't recall, as I sit here at the moment. But there
22 may have been one or two.

23 Q Are there any cases listed in your "Select
24 Project Experience" where arsenic was the primary
11:43 25 driver of a risk assessment?

1 A Again, I can't recall as I sit here.

2 Q Are there any projects on here where you
3 evaluated bioavailability of arsenic?

4 A I think every risk assessment
11:43 5 bioavailability was reviewed and addressed and
6 assessed.

7 Q Is there any specific project you can point
8 to where you spent a significant amount of time or
9 effort evaluating bioavailability of arsenic?

11:44 10 A Well, again, any of the risk assessments
11 that included arsenic has bioavailability components
12 to it, so those would be reviewed and assessed and,
13 you know, again that could be anywhere from, you
14 know, 30-plus cases.

11:44 15 Q Can you recall any project that's listed
16 here on your "Select Project Experience" where you
17 did not use a default value for bioavailability of
18 arsenic?

19 A I don't recall.

11:44 20 Q Is there any project listed in your "Select
21 Project Experience" that specifically concerned
22 exposure to arsenic through residential soils?

23 A I'm going to ask you to repeat that. I
24 didn't quite follow that.

11:45 25 Q Sure.

1 Are there any projects listed in your
2 "Select Project Experience" that specifically
3 concerned exposure to arsenic through residential
4 soils?

11:45 5 A Through residential soils. I believe the
6 two cases that are in relation to Everett and Omaha,
7 I believe then by the risk assessment process the
8 cement facilities and incineration facilities would
9 include receptors that would be residential as well,
11:45 10 so there's quite a number of them.

11 Q Is there any project listed in your "Select
12 Project Experience" where the primary focus of the
13 investigation was exposure to arsenic through
14 residential soils?

11:46 15 A I don't recall that there's one that is
16 specific to residential soils, but I evaluated the
17 pathways in the cases that I've just described.

18 Q Just return to your -- under "Ecological
19 Receptors," page A-12 --

11:46 20 A Okay.

21 Q -- that third bullet that I think you said
22 concerns some of the work that you did for this case;
23 is that right?

24 A Correct.

11:46 25 Q I think you said that you had conducted

1 historical toxicological research on articles and
2 records dating back to the 1700s for the Everett,
3 Washington case as well; is that true?

4 A That's what I recall.

11:47 5 Q Did you produce an expert report on those
6 issues?

7 A I don't recall if I was asked to produce
8 a -- sorry. I'm sorry.

9 When he says one-minute warning, I --

11:47 10 MS. STEVENSON: Why don't we take a break.

11 THE VIDEOGRAPHER: Going off the record. The
12 time now is approximately 11:47 a.m. This is the end
13 of disk number 1 in the deposition of Richard Pleus.

14 (Off the record.)

11:59 15 THE VIDEOGRAPHER: Going back on the record.
16 The time now is approximately 12:00 p.m. This is
17 the beginning of disk number 2 in the deposition of
18 Richard Pleus.

19 BY MS. STEVENSON:

12:00 20 Q Dr. Pleus, continuing to look at your CV
21 that is Exhibit 3 in this case, there is a section
22 called "Expert Peer Review Panels."

23 Do you see that on page A-13?

24 A Yes.

12:00 25 Q Are any of these panels that you've listed

1 here focused on arsenic?

2 A I believe -- I don't believe that any of
3 them are focused on arsenic; however, it's possible
4 that the EPA ad hoc science review might have asked
12:01 5 questions related to arsenic, but I just don't
6 recall.

7 Q Okay. This is the Federal Insecticide,
8 Fungicide and Rodenticide Act Scientific Advisory
9 Panel?

12:01 10 A Yes.

11 Q Do you recall personally participating in
12 any work related to that board on arsenic?

13 A I don't recall at the moment. I think most
14 of it was focused on another metal, but I don't want
12:01 15 to exclude the possibility that that didn't happen.

16 Q Okay. Have you served on any expert
17 peer-review panels that are not listed here that have
18 focused on arsenic?

19 A No.

12:01 20 Q Looking down at the next section of your
21 resume, "Conferences and Symposiums," do you see
22 that?

23 A Yes.

24 Q Did any of these conferences or symposiums
12:02 25 that you listed here focus on arsenic?

1 A No.

2 Q Have you participated in any conferences or
3 symposiums not listed here that focused on arsenic?

4 A No.

12:02 5 Q You list some educational courses next on
6 page A-14.

7 Are these courses that you taught or
8 attended?

9 A These are courses that I provided
12:02 10 presentations.

11 Q You were the presenter?

12 A Let me double-check, but I think that's
13 right.

14 Yes, I presented in these cases -- in these
12:02 15 courses.

16 Q Did any of these courses focus on arsenic?

17 A They didn't necessarily focus on, but some
18 of these courses did have arsenic as a component.

19 Q Okay. Can you point to any of them that
12:03 20 specifically had arsenic as a component?

21 A The lecture for the Department of
22 Pharmacology, University of Nebraska Medical Center,
23 courses in human health risk assessment for the
24 Technical Research Council in South Africa,
12:03 25 developed -- I'm just reading this, developed and

1 taught over five courses on risk assessment and risk
2 communication for the AWMA. That would include --
3 and then the last one is likely to have included
4 arsenic as well, but not the main focus.

12:03 5 Q Did any of them have arsenic as the main
6 focus?

7 A No.

8 Q Have you taught any courses not listed here
9 where arsenic was the main focus?

12:03 10 A No.

11 Q The next section, "Grants and Awards."

12 Have you received any grants or awards
13 specifically related to work on arsenic?

14 A No.

12:04 15 Q Looking at your advisory positions on
16 page A-16, do any of these advisory positions concern
17 advising regarding arsenic?

18 A I don't recall exactly, but it's possible
19 that one or two would not be focused on arsenic but
12:05 20 would -- but arsenic would be a component of the
21 advisory approach.

22 Q Can you tell me which those are?

23 A Some of those that are related to water and
24 water treatment where arsenic may be a contaminant of
12:06 25 concern would be one area where I could anticipate

1 that.

2 Q Can you think of any specific advice you've
3 given regarding arsenic in the course of your work in
4 any of these advisory positions?

12:06 5 A No.

6 Q Skip to your "Selected Professional
7 Presentations," pages A-17 through A-27, quite a few
8 professional presentations.

9 Did any of these presentations focus on
12:06 10 arsenic?

11 A I'm going to ask you to repeat the question
12 so I have it now fresh in my mind.

13 (The record was read as follows:

14 "QUESTION: "Did any of these
12:10 15 presentations focus on arsenic?")

16 THE WITNESS: None focused specifically on
17 arsenic.

18 BY MS. STEVENSON:

19 Q Are there any presentations that you've
12:10 20 given that are not listed here that focused on
21 arsenic?

22 A None that I can recall.

23 Q Looking at page A-27, your "Selected
24 Professional Publications," are any of these --

12:10 25 You know what a peer-reviewed publication

1 is?

2 A Yes.

3 Q What is a peer-reviewed publication?

4 A It's a publication -- it's a manuscript that
12:11 5 has been developed by authors that is submitted to a
6 journal and that journal undergoes some type of a
7 peer-review process.

8 Q And does that mean that the article is
9 reviewed by other experts in the same field?

12:11 10 A That's generally what it infers, yes.

11 Q Is whether or not an article is peer
12 reviewed something that's significant to you as
13 a scientist in evaluating its usefulness?

14 MR. STALPES: Objection; speculation and vague.

12:11 15 THE WITNESS: When you mean "usefulness," can
16 you be a little more specific?

17 BY MS. STEVENSON:

18 Q Well, what does it mean to you as a
19 scientist, when looking at publications, whether a
12:11 20 publication is peer reviewed or not?

21 Does it have any significance to you?

22 A It can.

23 Q When would it have significance to you?

24 A Well, it can have significance if the
12:12 25 peer review was conducted in a way to assure that

1 the quality of the work was done well. I mean, that
2 is certainly the intent of peer review. At times it
3 doesn't meet that standard.

4 So its usefulness is really based on the
12:12 5 manuscript itself, the data that are supporting the
6 manuscript. That's when it's most useful.

7 Q Does the peer-review process provide some
8 additional guarantees of the reliability of the
9 study?

12:12 10 MR. STALPES: Objection; broad and speculation.

11 THE WITNESS: Professionally, I wish that was
12 true. I have just run into a number of cases where
13 the data don't support what the authors are stating;
14 however, in general, the peer-review process at least
12:13 15 is a step forward, but it is not a guarantee.

16 BY MS. STEVENSON:

17 Q Do you have any peer-reviewed publications
18 that you've published yourself?

19 A Just in general?

12:13 20 Q Yes.

21 A Yes.

22 Q Are they listed in your "Selected
23 Professional Publications"?

24 A Yes, they are.

12:13 25 Q Can you tell me which ones they are?

1 A The ISO/PTDR 13014.

2 Q That's the first one listed?

3 MR. STALPES: Maybe I missed the question.

4 Are you just asking him what his

12:13 5 publications are?

6 MS. STEVENSON: I'm asking which of his

7 publications are peer reviewed.

8 MR. STALPES: I see. Okay.

9 THE WITNESS: So that one.

12:13 10 BY MS. STEVENSON:

11 Q That's on nanotechnologies?

12 A Uh-huh.

13 The next one, Bruce.

14 Q Is that the second one listed?

12:13 15 A Correct.

16 The -- following Bruce, although the Snyder,

17 S. one before it is a document that went under peer

18 review but is not in a peer-reviewed publication,

19 if you get my point.

12:14 20 Q Yes. Did it pass the peer review?

21 A Yes.

22 The next Bruce is still being developed.

23 The Belzer was peer reviewed. The Snyder S.A.,

24 similar to the one above, it is part of a grant that

12:14 25 has a group of peer reviewers that are part of the

1 process, but it's not in a peer-reviewed publication.
2 The next one, Linkov is. The next one,
3 Snyder S.A. is. The next Snyder E.M., I believe is.
4 The next one Chow is. The next one Wahlsten is. The
12:15 5 next one Greer is. The next one, Pleus, Goodman and
6 Mattie, I can't recall but it's -- the CIPA is not
7 a peer-reviewed journal, I'm sure of that.
8 Abstracts, the next one, Greer M.A., I believe that
9 was at a presentation and the abstract was reviewed
12:16 10 but it wouldn't be a peer-reviewed manuscript, per
11 se. Bylund is. Shiue, that's S-h-i-u-e, C. is.
12 The next one is a -- I don't believe was,
13 but it was in a collection of papers at a meeting.
14 The next one Pleus, as I recall, is but I'm not
12:16 15 positive.
16 Q Health effects?
17 A Yeah.
18 Shirai, S-h-i-r-a-i, I can't recall. It
19 looks like it's in a book. And it may be a chapter
12:17 20 in a book and it may have gone peer review, but I
21 can't recall.
22 The next one Pleus is. The next one Pleus,
23 Suder and Schmidt is a presentation at a meeting and
24 so I would say no. I can't recall. I would doubt
12:17 25 that Pleus and Pascoe was peer reviewed, but it may

1 have been. The next one Shiue and Shiue I believe
2 is. The next one Shiue and Bai is. The next one
3 Pleus, Shreve, Tows is. The next one Shiue, Shiue
4 is.

12:18 5 The next one is an abstract, so it would --
6 it may have gone some peer review, but it's still
7 just an abstract. And then Pleus and Bylund is.
8 And I believe Oatman and Pleus and Gray in Minnesota
9 Medicine, I believe -- it's been a while since I've
12:18 10 looked at that but I can't recall whether that is
11 peer reviewed or not. I'm assuming it is, but I may
12 be wrong.

13 Q Do you have any peer-reviewed publications
14 that focus on arsenic?

12:18 15 A No.

16 Q Do you have any non-peer reviewed
17 publications that focus on arsenic?

18 A Well, the risk assessments that I've been
19 responding to your questions would have components
12:19 20 of arsenic toxicology.

21 Q But those aren't publications, though, are
22 they? That's your actual work product?

23 A Maybe I don't understand what you mean by
24 "publications."

12:19 25 Q Well, let's look at the publications that

1 you've listed in your professional publications.

2 These don't include risk assessments, do
3 they, what you listed here under "Selected
4 Professional Publications"?

12:19 5 A I think actually some of them may go under
6 the risk assessment; in other words, if you were --
7 sometimes articles have key words, and a key word
8 in some of these would be risk assessment.

9 Q Would a key word in any of these be arsenic?

12:20 10 A No, I don't think so.

11 Q And then on the last two pages, you have
12 contributions to book chapters and some other
13 professional publications.

14 Do you see that?

12:20 15 A I do.

16 Q Is the focus of any of these book chapters
17 or professional publications arsenic?

18 A In Borak and Pleus, which is a -- in the
19 Textbook of Practical Approach to Occupational Health
12:20 20 and Medicine -- Environmental Medicine, that may have
21 information on arsenic.

22 Q Okay. Do you know whether it does or not?

23 A I can't recall.

24 Q How would you describe in general your area
12:21 25 of expertise?

1 A What my areas of expertise are, is that what
2 you are asking?

3 Q Yes.

4 A In toxicology or --

12:21 5 Q Yes.

6 A --specifically?

7 General toxicology, pharmacology, risk
8 assessment. I have further training in the nervous
9 system, reproductive system and developmental system.

12:22 10 Those would be some examples.

11 Q What is a developmental system?

12 A What is that?

13 Q Yes.

14 A Like fetal development.

12:22 15 Q Is it specific to fetal development or is
16 that one example?

17 A I'm not sure I follow your question.

18 Q You said developmental system. Is that a
19 body system?

12:22 20 A I'm not sure -- maybe we -- maybe I need to
21 hear your question over again.

22 Q You listed as one of your areas of expertise
23 developmental system.

24 A Yeah.

12:22 25 Q Did I hear that right?

1 A Yeah. What developmental means is how
2 organisms develop. So one example would be from
3 conception to birth, we call that development.

4 Q Okay.

12:23 5 A So that's an area that I have expertise in.

6 Q And are there other --

7 Does that also include like general growth
8 issues for humans or is it specific -- is your area
9 of expertise just with fetal development?

12:23 10 A I see. It covers the whole life system, but
11 one area as evidence, for example, by my dissertation
12 title. If you recall that, there was an exposure
13 period particularly during pregnancy. So that's an
14 area that I focused on. That's one area.

12:23 15 Q Have you ever designed an arsenic
16 biomonitoring study?

17 A No.

18 Q Have you ever conducted an arsenic
19 biomonitoring study?

12:23 20 A No.

21 Q Have you ever designed any study on the
22 bioavailability of arsenic?

23 A No.

24 Q Have you ever designed a study on
12:24 25 bioavailability for any chemical?

1 A Yes.

2 Q Which one?

3 A Which one what?

4 Q Which chemical have you designed a
12:24 5 bioavailability study for?

6 A Let me make sure I understand what you mean
7 by bioavailability study as well.

8 Can you explain?

9 Q Sure.

10 Bioavailability is a concept that you
11 address in your expert report in this matter; is that
12 true?

13 A Yes.

14 Q And that means if a subject is exposed to a
12:24 15 certain constituent, how much of that constituent is
16 actually taken up by the body.

17 Is that a fair description of
18 bioavailability?

19 A Okay. I just want to make sure I understand
12:24 20 what you are saying.

21 Q Is that your understanding of
22 bioavailability?

23 A It certainly captures the spirit of
24 bioavailability.

12:24 25 Q So which chemicals have you designed

1 bioavailability studies for?

2 A One more question.

3 Q Sure.

4 A When you say design a study, can you be more
12:25 5 specific as to what you mean by that?

6 Q I mean come up with all of the protocols
7 that are going to govern a study that is intended to
8 investigate the bioavailability of a particular
9 chemical.

12:25 10 A Okay. Well, as you can imagine, there's a
11 range of types of studies that could be done. But
12 some of the studies that I have participated on are
13 perchlorate, for example, where material was
14 administered or voluntarily provided to volunteers
12:25 15 in a dose. Another example would be worker studies
16 where they are exposed to different compounds,
17 environmental compounds, and we were measuring their
18 exposure and considered some other end points.

19 Q Okay.

12:26 20 A Those would be examples.

21 Other examples would include in my
22 pharmacology education and research experience where
23 I provided medications or drugs or experimental drugs
24 to animals and made an assessment within a fairly
12:26 25 broad range of bioavailability.

1 Q And did you actually --

2 You had a role in designing each of these
3 studies. Is that fair to say?

4 A Some more than others, yes.

12:26 5 Q Did you conduct any of these studies?

6 A What do you mean by "conduct"?

7 Q Did you actually administer the doses and
8 collect the data and analyze the data?

9 A In some cases, yes.

12:26 10 Q Which ones?

11 A Certainly all of the pharmacology studies.
12 Again, most of these studies have a number of people
13 and so my -- my involvement might be more focused as
14 to data collection, data evaluation, things along
12:27 15 that line. But perchlorate and I think the worker
16 studies as well.

17 Q And was the perchlorate study where you
18 provided perchlorate to volunteers, did you actually
19 conduct that study?

12:27 20 A Did I personally give them the perchlorate?
21 Is that what you are asking?

22 Q Well, did you participate in the part -- in
23 the -- the study occurred, I assume?

24 A Yes.

12:27 25 Q Did you actually participate in either

1 administering the doses or collecting the data or
2 analyzing the data?

3 A Yes.

4 Q Which part?

12:27 5 A I certainly assisted in analyzing the data.
6 The collecting of the data was done by a clinician
7 and the administration of the material was by a
8 clinician.

9 Q Other than analyzing the data, did you have
12:28 10 any other role in that study?

11 A Protocol design.

12 Q Anything else?

13 A A lot. I mean, those are some of the simple
14 things that I can remember. I had a fair degree of
12:28 15 involvement in those studies.

16 Q Are there any other general ways you were
17 involved in those studies that you can describe for
18 me?

19 A Besides data analysis, protocol development,
12:28 20 in part assisted in the QA/QC, making sure that the
21 QA/QC person was provided the data so they could do
22 that. Statistical analysis, ensuring that protocol
23 was followed to the degree that I could, ensuring
24 that all of the proper study protocols and designs
12:28 25 were administered as the protocol and ensure that --

1 along with the clinician, that we put no one in undue
2 harm.

3 Q Were the results of this perchlorate study
4 published?

12:29 5 A Yes.

6 Q Is it one of your articles that's referenced
7 in here?

8 A Greer.

9 Q Greer?

12:29 10 A 2002.

11 Q And you talked about another study on worker
12 exposure to different compounds?

13 A Yes.

14 Q What compounds were studied in that study?

12:29 15 A Well, I'm kind of recalling the best of my
16 recollection at the moment. I think they were
17 wood-processing types of occupations. I think we
18 were definitely looking at exposure at that point.

19 I can't recall some of the other details at
12:30 20 the moment.

21 Q What was your role in the study?

22 A I can't recall specifically, but I do know
23 that I'm involved in protocol development for studies
24 in our firm.

12:30 25 Q Were the results of the study published?

1 A They may have been.

2 Q You are not sure?

3 A I can't recall.

4 Q Were you an author of the study, a listed
12:30 5 author?

6 A I don't recall.

7 Q And then you mentioned some pharmacological
8 studies that you were involved in.

9 Were these all when you were pursuing your
12:30 10 PhD?

11 A In part, and my post doc.

12 Q Were there any pharmacological studies that
13 you were involved in after your post doc work?

14 A Some of the studies got published that were
12:31 15 part of my work after I left my post doc, but I --
16 I've been involved in a couple of projects by faculty
17 members who had been developing some compounds. It's
18 under confidentiality where I assisted in the process
19 of understanding bioavailability.

12:31 20 Q Any other published studies on
21 bioavailability besides the Greer study?

22 A Well, I think many of the positron emission
23 tomography studies have components of bioavailability
24 as a part of it. We have to look at that to
12:32 25 understand what doses to provide so that we get

1 representative detection. So many of the studies
2 have components of bioavailability as well.

3 Q Were any of them actually focused on
4 researching bioavailability?

12:32 5 A Well, all of them had to have some research
6 in order to answer the questions of what could we
7 expect if we gave a certain dose.

8 Q So as I'm understanding what you are saying,
9 bioavailability was a component of some of the
12:32 10 studies.

11 What I'm asking was it the focus of the
12 research question being addressed by any of the
13 studies besides the Greer study?

14 A Let's put --

12:33 15 Maybe a different way to answer your
16 question is that bioavailability by itself is just a
17 component, but when one is looking for how the
18 component -- how the drug or how the chemical works
19 in the body, you want to look at a number of
12:33 20 components. So I don't think you -- I don't think
21 it's, in our profession, fair to silo one component
22 when it's an integral part of the toxicological
23 evaluation, if you see what I'm trying to say.

24 Q Would bioavailability be a key word for any
12:33 25 of your published studies?

1 A No. I think because of just -- my answer in
2 that it's a component. It might be useful for one
3 person to know that differently, but they would be
4 able to obtain the information from the study.

12:34 5 Q Have you ever designed a soil sampling
6 program for EPA?

7 A A soil sampling program for EPA.

8 Can you be a little more specific in what
9 you mean by that?

12:34 10 Q Sure.

11 Has EPA ever hired you to come up with a
12 plan to sample soil in an area of concern?

13 A EPA has not hired myself or Intertox;
14 however, we have worked with EPA on dozens of
12:34 15 occasions in developing a plan.

16 Q A soil sampling plan?

17 A A soil sampling plan, for example.

18 Q Can you give me a specific example of cases
19 where you worked with EPA to develop a soil sampling
12:34 20 plan?

21 A I believe an example would be some of the
22 wood treatment facilities. One, for example, that
23 I can recall at the moment here in the State of
24 Washington, I believe it was both EPA and Department
12:35 25 of Ecology, which would be State of Washington, where

1 we worked on developing or reviewing soil sampling
2 plans.

3 Q Any other examples that come to mind?

4 A Not off the bat, but I know there are
12:35 5 others.

6 Q Has EPA ever hired you to conduct a risk
7 assessment at a site?

8 A EPA asked Intertox or myself to conduct a
9 risk assessment?

12:35 10 Q Yes.

11 A Not that I recall. But again similarly,
12 we've worked with them on risk assessment.

13 Q What about any state environmental agency.
14 Has a state environmental agency hired you to conduct
12:36 15 a risk assessment at a site?

16 A Yes.

17 Q And what state agency hired you?

18 A State of Washington.

19 Q Department of Ecology?

12:36 20 A That's one. Department of Transportation is
21 another. Those are two that I can think of.

22 Q What is the site that you were hired by
23 Department of Ecology for? What site did you do a
24 risk assessment on?

12:36 25 A Well, for example, the one that I was just

1 referring to in terms of a wood treatment. The
2 attorney general would be another -- I guess another
3 department within the state for the work in Everett.

4 Did I answer your question?

12:37 5 Q Uh-huh.

6 Any other examples that you can think of for
7 Department of Ecology in Washington hired you to
8 conduct a risk assessment?

9 A I know we worked with many states, state
12:37 10 agencies, like the State of Minnesota, I think the
11 State of Missouri, where we worked with them in
12 developing protocols and guidelines for the risk
13 assessment process, yeah.

14 Q And what about the Department of
12:37 15 Transportation, are there any other --

16 What site were you hired to do a risk
17 assessment for the DOT?

18 A For the State's Department of
19 Transportation? We were asked to take a look at
12:37 20 various pesticides and their use on roadways here in
21 the State of Washington. So it would theoretically
22 include the whole state.

23 Q Did you complete that risk assessment?

24 A Yes.

12:37 25 Q What year was that?

1 A I think it's ongoing, so I think we updated
2 when requested, so it may be the last was last year.

3 Q Do you recall when your first risk
4 assessment was produced in that matter?

12:38 5 A I don't recall.

6 Q This century, last century?

7 A Clearly this century.

8 Q I mean in the 2000s?

9 A Are you being facetious?

12:38 10 Q Before 2000, after 2000? Can you be that
11 specific?

12 A I'm sorry. I can't tell if you were joking
13 with me or not. So let's go back and I'll assume
14 that your question is straightforward.

12:38 15 If you could repeat it, please.

16 Q It was straightforward.

17 Can you recall whether it was this century?
18 And I mean, meaning the year 2000 or after, or before
19 that?

12:38 20 A It was during -- since 2000.

21 Q Okay. Thank you.

22 Have you ever designed a groundwater
23 sampling program for EPA?

24 A Again, I don't recall being hired by EPA
12:39 25 for groundwater but have been involved with EPA in

1 developing groundwater programs and other state
2 agencies.

3 Q Talk about just your work in general. Why
4 don't we say over the past ten years, what percentage
12:39 5 of your personal work has been litigation related?

6 A Over the last ten? For the best of my
7 recollection, it kind of depends on the year.
8 Sometimes it's more, sometimes it's less. I think
9 overall it's somewhere around 20 percent.

12:40 10 Q And how would you categorize the remaining
11 80 percent?

12 A Nonlitigation.

13 Q Is it regulatory, consulting to industry?

14 A It's a combination of those two, certainly.
12:40 15 We have research grants so that we conduct work on
16 that. That would be a third category from what
17 you've just mentioned.

18 Q Say take for the last ten years, can you
19 specify what percentage of your work has been on
12:41 20 behalf of industries that are alleged to be the
21 producers of some contaminant of concern?

22 MR. STALPES: Are you talking just with
23 litigation? I assume so.

24 MS. STEVENSON: No, I'm not.

12:41 25 MR. STALPES: Okay.

1 THE WITNESS: Can you repeat that question?

2 BY MS. STEVENSON:

3 Q Sure.

4 Let's take, for example, you worked for
12:41 5 industries, correct, in litigation and nonlitigation
6 matters?

7 A Yes.

8 Q What are some of the industries that you've
9 worked for?

12:41 10 A Cement industry, aviation industry, power
11 industry, chemical industry. Those are some
12 examples. Water industry, food industry,
13 pharmaceutical industry.

14 Q And in general, when you are representing
12:42 15 them, these are industries where they've been alleged
16 to be the producer of some contaminant of concern.

17 Is that fair to say?

18 A No.

19 Q Which of those industries --

12:42 20 In the cement case, that would be true,
21 correct?

22 A Well, I don't agree with the way that you
23 are phrasing the question.

24 Q Okay.

12:42 25 A Some cases -- let's take the cement

1 industry, as an example, was to come up with a risk
2 assessment process, a multi-pathway risk assessment
3 process that would be -- that would follow the golden
4 standard or the standard of risk assessment and
12:42 5 ensure that the approach was consistent with usually
6 not only federal standards but also consistent with
7 state standards.

8 And so you have cement kilns that operate in
9 different parts of our country, and so there is a
12:43 10 requirement that the process be done and set up.
11 That would be an example.

12 Q But in that case, the cement industry is
13 undertaking this work because it is -- there are
14 concerns that it is emitting things into the
12:43 15 environment.

16 Is that fair to say?

17 A I think that's fair.

18 Q Can you estimate what percentage of your
19 work over the past ten years has been on behalf of
12:43 20 industry, like the industries that you just listed
21 for me, versus on behalf of a government agency or
22 private citizens?

23 A I don't know the actual number, but I can
24 give you a guess.

12:43 25 Q Sure.

1 A I'm thinking somewhere between 50 and
2 60 percent.

3 Q And what percent would be on behalf of
4 government agencies?

12:43 5 A Maybe 10 percent on average.

6 Q And what would the balance be?

7 A Litigation, research grants, associations.
8 I don't know, then maybe industry goes from 60 to
9 50 or 40, or something like that.

12:44 10 Q Well, some of your litigation work would
11 also be on behalf of industries.

12 Would that be fair to say?

13 A Yes.

14 Q Over the last ten years in your litigation
12:44 15 work, can you identify what percentage is on behalf
16 of industries versus on behalf of private citizens or
17 government entities?

18 A Again, I don't have a specific number, but I
19 would say somewhere around 60 percent, you know, plus
12:45 20 or minus 10 percent would be where attorneys
21 representing a company would ask for an independent
22 review, and the other percentage would be attorneys
23 that represent non-industry would ask for an
24 independent review.

12:45 25 Q You have worked with industry clients that

1 are engaged with environmental state or federal
2 agencies in preparing risk assessments.

3 Is that fair to say?

4 A Yes.

12:45 5 Q Have you ever conducted any studies that
6 were funded by industry clients that were used to
7 gather data to -- data that was to be used to
8 facilitate a risk assessment process?

9 A Yes.

12:46 10 Q Can you give me an example of a time you've
11 done that?

12 A Oh, the perchlorate Greer study would be an
13 example.

14 Q And --

12:46 15 A In fact, we disclosed that on our
16 publications.

17 Q Right.

18 Do you -- and have you done work like that
19 on other occasions besides just for the perchlorate
12:46 20 industry?

21 A Yes.

22 Q What other industries or substances have you
23 done that on?

24 A Well, we have a couple that are going to
12:46 25 be -- that are being developed right now that are for

1 state agencies.

2 Q What industry do those relate to?

3 A State agency.

4 Q No. What industry did those relate to or
12:47 5 what substance is at issue?

6 A Oh, I'm -- what substances are those?

7 Q Yes. Is this work that you are doing on
8 behalf of a particular industry?

9 A A state agency. It's work conducted by a
12:47 10 state agency.

11 Q And is the state agency the potentially
12 responsible party for alleged contamination?

13 A It's not exactly the type of case it is, but
14 it has to do with a contaminant of concern and
12:47 15 exposures to individuals. And so it's a risk
16 assessment, to make an assessment of whether or not
17 that that harm was -- that these individuals could
18 have been harmed.

19 Q And what is the constituent of concern?

12:47 20 A They are nitrates and nitrites, and then a
21 whole bunch of other compounds as well.

22 Q And what are the relevant state agencies?

23 A State of Washington, Department of
24 Transportation.

12:48 25 Q And is the Department of Transportation

1 alleged to have exposed people to these nitrates or
2 nitrites?

3 A The particular -- there is no case here, so
4 I'm kind of -- I want to make sure I'm answering your
12:48 5 question.

6 And contamination doesn't necessarily mean
7 that the group that hired you is the cause of that.
8 It could be that they were -- just happened to be in
9 a situation where there was contamination and they
12:48 10 didn't realize it until it was discovered, if you
11 will.

12 Q Let me ask this: Where in this work that
13 you are doing did these nitrates or nitrites, where
14 are they alleged to have come from?

12:49 15 A From drinking water.

16 Q How did they get into the drinking water?

17 A It's a bit of a good question. It appears
18 that their water systems were hooked to the
19 environmental cooling system of the building.

12:49 20 Q And who -- was the building owned by the
21 Department of Transportation?

22 A No.

23 Q Who was the building owned by?

24 A The owner of the building, I don't recall.

12:49 25 Q Why is Department of Transportation involved

1 in the case?

2 A Because they are renting space from the
3 building.

4 Q Okay. So coming back to, for instance, the
12:49 5 perchlorate situation. You were hired by members of
6 the perchlorate --

7 Is there a perchlorate industry?

8 A There's a group called the Perchlorate Study
9 Group.

12:49 10 Q And who are the members of that group?

11 A Currently they include Lockheed Martin,
12 American Pacific Corporation, ATK and Aerojet.

13 Q And are these companies that are at least
14 alleged to have contributed perchlorate into the
12:50 15 environment?

16 A They are either users or manufacturers of
17 perchlorate.

18 Q And you conducted scientific research on
19 their behalf for them to use -- to work with EPA and
12:50 20 regulatory agencies.

21 Is that fair to say?

22 A Yes. They did work with EPA and we did work
23 with EPA.

24 Q And did they pay for that research, the
12:50 25 companies themselves?

1 A Most of the funding was by industry. There
2 were portions that were provided through a -- small
3 portions that were provided by the grants, by the
4 clinician, but most of it was by the industry.

12:51 5 Q Why did the industries want to fund the
6 research?

7 MR. STALPES: Objection; foundation and
8 speculation.

9 THE WITNESS: I don't -- I don't know the answer
12:51 10 to that question. I do know what we did. I don't
11 know the answer to your question.

12 BY MS. STEVENSON:

13 Q Do you have any understanding at all of why
14 these industries would have wanted to fund research
12:51 15 regarding perchlorate?

16 MR. STALPES: Objection; asked and answered,
17 foundation, speculation.

18 THE WITNESS: Can you repeat your question,
19 please.

12:51 20 BY MS. STEVENSON:

21 Q Do you have any idea why these industries
22 would have wanted to fund research on perchlorate?

23 MR. STALPES: Same objections.

24 THE WITNESS: Well, there was a -- as I
12:52 25 understand it, back in the '90s when this contaminant

1 was discovered, I believe, in groundwater but
2 potentially soil as well, and the state and federal
3 agencies became interested in it, the -- and then I
4 don't -- I don't have a lot of detail, but data gaps
12:52 5 existed for which data was filled. So animal studies
6 was done, this study was done. I believe something
7 like 13 animal studies were conducted in order to get
8 an understanding of the toxicological database.

9 BY MS. STEVENSON:

12:53 10 Q In other words, they were trying to provide
11 more data to evaluate perchlorate?

12 MR. STALPES: Objection; form.

13 THE WITNESS: Again I don't know what their
14 intention was, but there was -- clearly there were
12:53 15 data gaps that whoever the interested parties were at
16 the time and the federal agencies and the state
17 agencies decided, I believe together but I don't know
18 exactly, to fill in data, provide data.

19 BY MS. STEVENSON:

12:53 20 Q And the industry funded the research to
21 provide that data?

22 A It certainly provided funding. As I recall,
23 the animal studies were funded, the Greer study was
24 funded, but I don't know if all of that work was
12:53 25 funded by industry.

1 Q In your research that you did on perchlorate
2 that was funded by these industries, did you believe
3 that the industries were motivated to obtain biased
4 data?

12:54 5 MR. STALPES: Objection; foundation,
6 speculation.

7 THE WITNESS: I don't know what their intentions
8 one way or the other. When -- all I can tell you is
9 when I'm asked to conduct a study, I come in and we
12:54 10 conduct it using either for risk assessment, the
11 standard process, or if it's a study to develop
12 information on behavior or outcomes or something like
13 that in animals, the protocol is a standard well set,
14 well designed as best as we can study.

12:54 15 BY MS. STEVENSON:

16 Q In the course of doing your research on
17 perchlorate, did you ever see anything that suggested
18 to you that the industries funding the studies
19 attempted to manipulate the outcome of the studies in
12:55 20 any way?

21 A All of the studies that I'm aware of, the
22 studies were all done under good laboratory practice,
23 GLP, so there's a level of independence through that
24 process that is required in documentation. And I can
12:55 25 answer it -- the question that way. I don't have any

1 other -- I don't have any understanding of intentions
2 by one group or not.

3 Q And I'm just asking whether you ever saw --

4 Is there anything you could point to that
12:55 5 ever suggested to you that any funder of your
6 perchlorate research was attempting to bias or
7 manipulate any of the data in the research?

8 A We, as Intertox and myself, have not been
9 approached to do anything of the sort, other than to
12:56 10 do the best independent analysis using the best
11 scientific protocols.

12 Q Have you ever been approached by a client to
13 try to bias or manipulate data?

14 A I think that's going to be confidential.

12:56 15 Q So you have?

16 A I don't feel like I can answer that
17 question.

18 MR. STALPES: Fair enough.

19 I'll object, then, and it calls for
12:56 20 confidential information.

21 This probably would get someone or another
22 into trouble here. You can ask him about this case,
23 but whatever he has probably will get somebody else
24 into trouble.

12:57 25 BY MS. STEVENSON:

1 Q Do you consider yourself an expert on
2 arsenic?

3 A I consider myself an expert on metals, and
4 arsenic is one of those, yes.

12:57 5 Q You do consider yourself an expert on
6 metals?

7 A Uh-huh.

8 MR. STALPES: Just for the record there, you
9 just kind of nodded. That's a yes?

12:57 10 THE WITNESS: I'm sorry. Yes.

11 MS. STEVENSON: He's on video.

12 Q Do you consider yourself an expert on
13 arsenic toxicity?

14 A Yes.

12:57 15 Q Is there anything that you believe qualifies
16 you as an expert on arsenic and arsenic toxicity that
17 we have not already talked about in your CV today?

18 A Yes.

19 Q What is that?

12:57 20 A All of the coursework that I've taken, the
21 readings that I have done that are not in the CV, the
22 projects that are not listed in the CV, the risk
23 assessments that I've conducted. Those would add to
24 that as well.

12:58 25 Q When you talk about your readings, have you

1 done -- and I'm going to take it outside of the
2 context of your work on this case.

3 A Yes.

4 Q Before you started to work on this case,
12:58 5 what reading have you done specific to arsenic?

6 MR. STALPES: Well, objection. That's probably
7 pretty broad.

8 But go ahead.

9 THE WITNESS: I mean, I read journal articles.
12:58 10 I read textbooks. I read information from
11 authoritative bodies, such as ATSDR, EPA, WHO,
12 organizations like that. I'm obviously generally
13 interested in these types of questions on a global
14 basis, so there's other organizations besides WHO.
12:59 15 Arsenic is an interesting compound from a
16 toxicological perspective, so I am interested and I
17 keep up.

18 BY MS. STEVENSON:

19 Q You're familiar with Dr. Tsuji?

12:59 20 A Yes.

21 Q Have you reviewed her CV?

22 A I believe I looked at it. I didn't look at
23 it in tremendous detail.

24 Q Would you agree that Dr. Tsuji is an expert
12:59 25 regarding the toxicological effects of arsenic?

1 A I would assume so, yes.

2 Q Do you think that Dr. Tsuji has more
3 experience with arsenic than you do?

4 A In what way would you be thinking of that?

12:59 5 Q In the course of her entire toxicological
6 career and yours.

7 A I don't know how to evaluate that.

8 Q Okay. Would you agree that she has several
9 peer-reviewed publications on arsenic specifically?

12:59 10 A She may. I've seen in her expert report she
11 points to one or two articles that I recall.

12 Q Would you agree that she has worked on a
13 number of sites where arsenic was the primary
14 constituent of concern?

01:00 15 A Yes.

16 Q Would you agree that she has conducted
17 biomonitoring studies related to arsenic?

18 A I'm certainly aware of some aspect of
19 biomonitoring that she has participated in, yes.

01:00 20 Q Do you know anybody who has more expertise
21 with respect to arsenic than Dr. Tsuji?

22 MR. STALPES: Object to the form.

23 THE WITNESS: I'm not quite sure how to answer
24 that question because there's probably hundreds of
01:00 25 people that are.

1 BY MS. STEVENSON:

2 Q Is there anybody that comes to mind?

3 A I mean, I can't think of them, but it would
4 be a matter of a minute or two to do a literature
01:01 5 search to find any number of people.

6 Q Do you agree that Dr. Tsuji sits on the
7 National Academy of Sciences committees that are
8 specifically devoted to arsenic?

9 A I'm not aware.

01:01 10 Q Did Dr. Tsuji give any opinions in her
11 report that you don't believe she was qualified to
12 give?

13 MR. STALPES: I'm going to object. Overbroad.

14 If you have any specific things, maybe you
01:01 15 should come up with the report and show it to him.
16 I think that's an awful broad question.

17 THE WITNESS: Can you be more specific?

18 BY MS. STEVENSON:

19 Q Yes.

01:01 20 Dr. Tsuji gave a number of opinions in her
21 report, correct?

22 MR. STALPES: I would object there that the
23 disclosures speak for themselves.

24 THE WITNESS: I mean, I can recall that she's
01:02 25 given some. But is there anything more specific that

1 you could point to?

2 BY MS. STEVENSON:

3 Q Sure.

4 You reviewed her report carefully, correct?

01:02 5 A Yes.

6 Q And you provided a rebuttal report to it?

7 A Yes.

8 Q In the course of reviewing her report, did
9 you see her give any opinions that you didn't think
01:02 10 she was qualified to give?

11 MR. STALPES: And I'll make the same objection.

12 Go ahead, but this is a broad question.

13 THE WITNESS: So here's where I'm a little
14 confused in your question. To give an opinion and
01:02 15 qualifications, to me are not necessarily synonymous
16 or logical. She gave opinions. She's clearly
17 qualified, but her opinions I don't agree with.

18 BY MS. STEVENSON:

19 Q Right.

01:02 20 But you don't dispute that she has the
21 qualification to give the opinion?

22 MR. STALPES: I'm going to put another objection
23 here that this calls for a legal conclusion, if
24 that's what you are having him do, sit as the judge
01:03 25 here who's qualified to make opinions.

1 But go ahead.

2 THE WITNESS: Yeah. See, I'm not.

3 BY MS. STEVENSON:

4 Q I'm asking your opinion purely as a
01:03 5 toxicologist.

6 A And I am -- I think there are a number of
7 opinions that she has provided that I think are in
8 error --

9 Q Right.

01:03 10 A -- to the science --

11 Q Correct.

12 A -- that don't provide an appropriate level
13 of uncertainty on those things. And I disagree with
14 those. So how she -- how -- what the rationale in
01:03 15 many cases, it's very difficult to determine what she
16 did in order to come to that opinion. So I can't
17 really assess the idea of her qualifications to that
18 opinion. That's where I cannot answer your question.

19 Q Do you think that Dr. Tsuji has the relevant
01:04 20 expertise to opine on the protectiveness of the
21 arsenic action level at the Anaconda smelter site?

22 I understand you disagree with her
23 conclusions, but does she have the expertise?

24 A Again, this is where I'm confused by your
01:04 25 question in that it's not transparent using the

1 information provided in her report to understand what
2 it was that led her to her opinion. And with that,
3 it's extremely difficult for me to make -- to answer
4 your question. I cannot answer your question.

01:05 5 Q So you cannot give me an example of any
6 opinion Dr. Tsuji has given that she was not
7 qualified to give. I understand you disagree with
8 the opinion itself or the way that she reached it,
9 but there's no credential that you can point me to
01:05 10 that she needs that she doesn't have in order to give
11 opinions on this topic?

12 MR. STALPES: I'm going to object to the form.
13 It's not only compound, it's suggestive and leading
14 and --

01:05 15 MS. STEVENSON: I'm allowed to lead an adverse
16 witness.

17 MR. STALPES: -- and mischaracterizes his
18 testimony.

19 THE WITNESS: I don't know how to answer your
01:05 20 question given the way that you've stated it.

21 BY MS. STEVENSON:

22 Q Do you have any expertise relevant to this
23 case that you think Dr. Tsuji does not have?

24 A Again, a question that's extremely
01:06 25 difficult, given what I've just been saying over and

1 over, is that it's not clear how or what information
2 was provided to come to an opinion, which is really
3 quite critical to make an evaluation of the opinion.

4 An example here would be -- potentially an
01:06 5 example I think is on the bioavailability. I don't
6 know what her experience has been, for example, in
7 other agents and analyzing other agents, which again,
8 if I look at my background, I have a diverse set of
9 therapeutic agents as an example for which
01:07 10 understanding absorption distribution becomes key.
11 So I don't -- I can't make that evaluation. I don't
12 have all of that information.

13 Q Nothing you can tell me sitting here today?

14 A Nothing that I can -- that I'm aware of.
01:07 15 But I don't think I can answer your question as I sit
16 here today.

17 Q Do you think that Dr. Tsuji has any
18 expertise that is relevant to this case that you do
19 not have?

01:07 20 A I can't think of anything.

21 MS. STEVENSON: Okay. Why don't we take a break
22 for lunch. I'll be ready to start as soon as you
23 guys want to start again.

24 MR. STALPES: Okay. Should we take 30 or 40?

01:07 25 MS. STEVENSON: Yeah, that's fine.

1 MR. STALPES: Off the record.

2 THE VIDEOGRAPHER: Going off the record. The
3 time now is approximately 1:08 p.m.

4 (Lunch taken.)

01:53 5 THE VIDEOGRAPHER: Going back on the record.
6 The time now is approximately 1:54 p.m.

7 BY MS. STEVENSON:

8 Q Dr. Pleus, when were you first retained to
9 work on this case?

01:53 10 A I'm not exactly sure, but I believe about
11 maybe a year ago, roughly speaking.

12 Q Summer of 2012?

13 A That's my best recollection.

14 Q And who contacted you about the case?

01:54 15 A I believe it was Mr. Stalpes.

16 Q Had you ever known Mr. Stalpes before?

17 A No.

18 Q Had you ever done any work for the Beck,
19 Amsden firm before?

01:54 20 A No.

21 Q What about the Lewis, Slovak firm, had you
22 ever done any work for them?

23 A No.

24 Q Do you know how Mr. Stalpes came to contact
01:54 25 you?

1 A Not really.

2 Q Did he have a referral from anybody you had
3 worked for before?

4 A I don't know.

01:54 5 Q Prior to the time you were contacted by
6 Mr. Stalpes, did you have any familiarity with the
7 Anaconda smelter Superfund site?

8 A When you say "any contact," is that what you
9 used?

01:55 10 Q Yes.

11 A Contact in the sense that I read about it
12 in a general sense. You know, there's a number of
13 papers and presentations at meetings, for example,
14 where people that have worked at least in this
01:55 15 general vicinity have reported on it. So from that
16 perspective, yes, I've had contact with it.

17 Q I think my question was -- and I might have
18 misspoke, but what I think I might have asked is if
19 you had any familiarity with it. But I think the
01:55 20 answer you gave would be the same?

21 A It would.

22 Q Did you ever actually work on the Anaconda
23 smelter Superfund site outside of this litigation?

24 A No.

01:55 25 Q Have you ever participated in any studies

1 related to the Anaconda Superfund site outside of
2 this litigation?

3 A Not that I'm aware of.

4 Q What was the assignment that you were given
01:56 5 at the outset of your work on this case?

6 A So I was asked to review the CDM report,
7 which is the Baseline Human Health Risk Assessment,
8 to review that from a scientific perspective, to
9 review it from a process perspective, meaning did it
01:56 10 follow EPA guidelines for conducting this type of a
11 risk assessment, to -- and then if appropriate, you
12 know, dig deeper to try to understand what, if
13 anything, was of concern regarding the conducting of
14 the risk assessment, the process of the risk
01:57 15 assessment or how it was -- or whether or not it
16 followed the EPA standard guidelines.

17 Q And did you have an understanding of how
18 your work related to the claims of the plaintiffs in
19 the case?

01:57 20 A Not particularly. I mean, I understand that
21 there are plaintiffs. I understand that there are --
22 they -- there are claims of some sort on
23 contamination of their properties, but to what degree
24 and, you know, what the import of that, per se, I've
01:57 25 only been asked to look at the risk assessment side

1 of it and the toxicological perspective.

2 Q Prior to looking, -- and just for
3 definitional purposes, the document you described
4 that you reviewed, the Baseline Human Health Risk
01:58 5 Assessment for the Anaconda smelter Superfund site,
6 if I say HHRA, can we agree that we're talking about
7 that document?

8 A Sure. That's the CDM, was it 1996 document?

9 Q Correct.

01:58 10 A Sure.

11 Q Before reviewing the HHRA as part of this
12 litigation, had you had any familiarity with the
13 regulatory record at the Anaconda Superfund site?

14 A I'm sure I may have had some familiarity
01:58 15 because of other projects that I've worked on, and
16 part of that is to, for example, look at the record
17 of decision to try to understand if I'm on a project
18 in place "X" what other ones have been conducted that
19 might be or may or may not be similar. And so to
01:59 20 that degree, I'm sure I've had some familiarity with
21 it.

22 Q Can you recall any specific instances where
23 you looked at the regulatory record from the Anaconda
24 Superfund site prior to being involved in this
01:59 25 litigation?

1 A I can't recall anything at the moment.

2 Q Would it be fair to say that your initial
3 task in the case was to critique the HHRA?

4 A No, I think the initial task was to review
01:59 5 that HHRA and determine whether or not that HHRA had
6 followed standard guidelines. Then at that point, if
7 there are concerns, more of a critique of it, what
8 are the deficiencies, you know, what are the
9 strengths, what are the weaknesses.

01:59 10 Q And that's what you ultimately ended up
11 doing was a critique of the HHRA?

12 A Yes.

13 Q As you've mentioned, the HHRA was done by a
14 company called CDM, right?

02:00 15 A Yes.

16 Q And did you understand that CDM was under
17 contract to the EPA to do that work?

18 A That's what it stated in the document.

19 Q Is that, in your experience, is that
02:00 20 uncommon for EPA to hire a contractor to conduct HHRA
21 for Superfund site?

22 A I don't know specifically the answer to that
23 question but I do know that EPA does hire contractors
24 in a number of different areas.

02:00 25 Q Are all of the opinions that you intend to

1 give in this case included in your initial and
2 rebuttal reports that you've submitted?

3 A As far as I know. I haven't been asked any
4 other questions at this point. I don't really know
02:01 5 what the process is, if someone asked me another
6 question, but they certainly contain the information
7 and my opinions as of today.

8 Q And I think you just answered this, but do
9 you have plans to do any additional work on the case
02:01 10 at this point in time?

11 A I don't have any plans to at this time.

12 Q How did you go about conducting your initial
13 review of the HHRA?

14 A I read it.

02:01 15 Q And did you do anything else in the course
16 of reading it?

17 A Such as?

18 Q Look at other documents, talk to anybody?

19 A I think the very first thing was to read it.

02:01 20 Q And what did you do after that?

21 A Then I started to ask questions to myself
22 because it was, at a minimum, the first read,
23 confusing.

24 Second impression that I can recall was that
02:02 25 there seems to be missing information and I don't

1 mean -- I don't mean that there's -- there were
2 things that pop up that I don't see how they were
3 derived. That's what I mean by that more
4 specifically.

02:02 5 So those are the next series of questions
6 that I thought of.

7 Q And once you thought of those questions,
8 what did you do next?

9 A Kind of reread it and checked it again and
02:02 10 found that those initial concerns could be refined
11 and a list of tasks could be then developed.

12 Q And what were those tasks?

13 A Well, one was to pull together the studies
14 that were referenced in the document.

02:03 15 Q Did you do that?

16 A Yes.

17 Another was to review certain sections of
18 the document and then go back to EPA guidance, for
19 example, and see how does EPA address this issue or
02:03 20 how does it require its -- these issues to be
21 addressed. Those are some examples.

22 Q Did you ever talk to anyone who was involved
23 in the preparation of the HHRA?

24 A I did not.

02:03 25 Q Did you talk to anyone from EPA about the

1 HHRA or the record of decision that the HHRA
2 informed?

3 A No.

4 Q Did you review other expert reports prepared
02:04 5 by experts in this case?

6 A Well, Dr. Tsuji, her reports.

7 Can you be more specific about experts in
8 this case, what that means?

9 Q The plaintiffs have hired other experts to
02:04 10 give opinions in this case, namely John Kane and
11 Fredrick Quivik.

12 Did you review reports by either of those
13 gentlemen?

14 A I believe I think it's Dr. Quivik. I think
02:04 15 I read through his report once. Mr. Kane, I've seen
16 data that had been developed, collected by Mr. Kane
17 as well.

18 Q Did you review the expert report that was
19 submitted by Mr. Kane in this litigation?

02:04 20 A I don't recall that I did, just the data.

21 Q And other than Dr. Tsuji, did you review the
22 expert reports of any of the experts retained by
23 Atlantic Richfield in this case? That would include
24 Steve Larson, Kathy Johnson, Richard Bartelt.

02:05 25 A None of those names are familiar to me.

1 Q Can you think of any other expert report
2 that was prepared as part of this case that you
3 reviewed?

4 A I've seen like a memorandum. I believe
02:05 5 it's from Atlantic Richfield or at least has a cover
6 letter and describes some analysis that was done on
7 the HHRA.

8 Q Is this a document that was prepared as part
9 of this litigation or some other point in time?

02:06 10 A I understand that it has been, yes.

11 Q Can you give me any more details about this
12 document?

13 A Not offhand, other than it was -- it
14 talked -- went into some discussion about the
02:06 15 bioavailability factor.

16 Q Can you recall who the author of the
17 document was?

18 A Not offhand, I cannot.

19 MR. STALPES: Do you want me to help?

02:06 20 MS. STEVENSON: Yes, please.

21 MR. STALPES: These are those technical
22 memorandums that were included in Dr. Tsuji's file
23 which were the -- I think one was SRI elicited by
24 Jim Kuypers, and in response, Arco retained another
02:06 25 company.

1 Do you know which ones I'm talking about?

2 MS. STEVENSON: I do vaguely, yeah.

3 MR. STALPES: It's those.

4 MS. STEVENSON: Thanks.

02:06 5 Q In the course of your work on this case,
6 have you interviewed any of the plaintiffs?

7 A No.

8 Q Have you communicated with them in any way?

9 A No.

02:07 10 Q Did you send any kind of surveys to the
11 plaintiffs?

12 A No.

13 Q Did you ask their lawyers to send surveys to
14 them on your behalf?

02:07 15 A No.

16 Q Did you speak to anyone else in the course
17 of preparing your report about the substance of your
18 report?

19 A To my staff.

02:07 20 Q Anybody besides your staff?

21 A And Mr. Stalpes.

22 Q Okay.

23 A And some of his colleagues. That's it.

24 (Deposition Exhibit 4 was
02:07 25 marked for identification and is

1 attached hereto.)

2 BY MS. STEVENSON:

3 Q Dr. Pleus, I'm handing you Exhibit 4, which
4 I'm going to have to share with you. These are
02:08 5 documents that you brought here today that I believe
6 are invoices reflecting the time the people at
7 Intertox have spent preparing your reports in this
8 case.

9 Is that fair to say?

02:08 10 A Yes.

11 Q And do these invoices reflect all of the
12 time that has been spent by Intertox on this matter?

13 A To the best of my knowledge, yes.

14 Q And I see a little adding machine strip
02:08 15 there at the front. Does that reflect the total
16 amount that Intertox has been paid on this matter?

17 A I'm assuming so. When I asked my financial
18 person, accountant, to respond, this is typical of
19 what she will do, so I'm assuming that that's what
02:09 20 that is. I didn't double-check it myself.

21 Q I think that reflects approximately
22 \$130,000; is that right?

23 A That's correct.

24 Q And that's what's been paid to Intertox, to
02:09 25 your knowledge?

1 A No, I don't know if that's been paid to
2 Intertox. But that would be the sum of our invoices.

3 Q Okay. So you might have not received
4 payment on all -- for that entire amount yet.

02:09 5 Is that fair to say?

6 A That's possible, yes.

7 Q There are a few different categories of
8 individuals listed there, one of them is chief
9 toxicologist.

02:09 10 Do you see that?

11 A Yes.

12 Q And are you a chief toxicologist?

13 A Yes.

14 Q Is all of the time that is billed to the
02:09 15 category chief toxicologist in these invoices time
16 that you personally spent working on the matter?

17 A Yes.

18 Q There's no other chief toxicologist at
19 Intertox that would have recorded time?

02:10 20 A I'm just double-checking. The answer
21 appears to be it's just me, it's just my time, yeah.

22 Q Who at Intertox besides yourself has worked
23 on this matter?

24 A Individuals include the following: Gretchen
02:10 25 Bruce, Lisa Corey, Kerry King, Gavin Bell, and

1 Heather Klintworth. I think those are all of the
2 individuals that I can think of.

3 Q And what category, billing category is
4 Gretchen Bruce?

02:10 5 A Gretchen is a senior toxicologist.

6 Q What about Lisa Corey?

7 A Lisa is a staff scientist.

8 Q And Kerry King?

9 A Librarian.

02:11 10 Q Gavin Bell?

11 A Project assistant.

12 Q And Heather Klintworth?

13 A Would be staff toxicologist as well.

14 Q Okay. Is there a staff toxicologist? I saw
02:11 15 there's a senior toxicologist and I think you said a
16 staff scientist.

17 A I'm sorry. Just let me double-check if
18 there's differences between that. There is a staff
19 scientist and then there is a staff toxicologist.

02:11 20 Q Okay. Which is Heather Klintworth?

21 A Staff scientist.

22 Q And do you know who among your team spent --
23 including yourself, spent the most amount of time in
24 preparing the reports on this case?

02:11 25 A I think -- I'm sure Gretchen Bruce has spent

1 a fair amount of time on this case. I'm sure Kerry
2 in terms of obtaining the documents has as well. I
3 think they all have -- they've all spent time.

4 Q Do you think between yourself and Gretchen
02:12 5 Bruce, she spent more time on the case in preparing
6 the reports or you did?

7 A I don't know.

8 Q Were there any particular assignments
9 related to the reports that you handed over to
02:12 10 Gretchen?

11 A Well, there's a number of things that I did
12 hand over to not only Gretchen but others, and that
13 is historical kind of understanding of the EPA
14 guidance and see if there's anything unique,
02:12 15 literature search. I instructed Gretchen to
16 investigate the bioavailability factor. I asked
17 Kerry to obtain historical documents. Those are some
18 examples I can think of.

19 Q Are there any portions of your report that
02:13 20 you are not the principal author of?

21 A I am the principal author of the report.

22 Q Are there any sections that were primarily
23 authored by someone else besides you?

24 A There are certain sections that people
02:13 25 drafted and then I edited, but I become the

1 responsible person. It's my -- in the end, it's my
2 work.

3 Q Did Gretchen Bruce draft the bioavailability
4 section?

02:13 5 A She put together some portions of it, but
6 her -- my request was more specific towards getting
7 specific information on the study, the dosing and
8 then, for example, conducting more of a historical --
9 or a literature search on that particular topic.

02:14 10 Q Did she draft some sections of the
11 bioavailability section of the report?

12 A She put some paragraphs together, yes.

13 Q What about Lisa Corey, did she provide the
14 initial draft of some sections of the report?

02:14 15 A Do you have a copy of my report? Maybe that
16 will help.

17 Q I do.

18 (Deposition Exhibit 5 was
19 marked for identification and is
02:15 20 attached hereto.)

21 THE WITNESS: I can't recall specifically but
22 sections that I would normally have people help draft
23 portions of would be just general risk assessment
24 guidelines and history. Another thing that I would
02:15 25 have individuals do would be to pull together

1 spreadsheets and then put algorithms together. And
2 that would be probably a combination of Heather and
3 Lisa, for example. Lisa doing the -- more of the
4 former risk assessment process. Gretchen could
02:15 5 participate as well.

6 When it comes to the alternative exposure
7 assumptions, I think those are where the data that's
8 been derived in the first couple of sections are
9 investigated and at that point, I will have
02:16 10 discussions with individuals about that. They may
11 then draft based on my discussions with them at least
12 a point forward, but then I review it and edit it.

13 Q Are there any sections of your report that
14 you are exclusively responsible for authoring
02:16 15 yourself?

16 A Pretty much the whole thing.

17 Q Okay. Did you write the first draft of all
18 sections of your report?

19 A I put together the outline. I put together
02:16 20 the sections. I put together what I wanted in those
21 sections, and I -- for the whole report, and then
22 I drafted the summary and conclusions, the executive
23 summary, in total.

24 Q And other folks filled in the remainder of
02:17 25 the sections, at least with an initial draft.

1 Is that fair to say?

2 A Yeah. An initial draft is not -- it could
3 be a paragraph here, a paragraph here and then I take
4 those and develop them further.

02:17 5 Q Okay. Let's go to your report, then, in
6 front of you there.

7 So it's my understanding that your initial
8 report does two things. That it critiques EPA's
9 HHRA.

02:17 10 Is that fair to say?

11 MR. STALPES: Object to the form.

12 THE WITNESS: I critique the HHRA.

13 BY MS. STEVENSON:

14 Q And that you then conduct a new HHRA.

02:18 15 Is that fair to say?

16 A I don't see it exactly that way. I think
17 the first is review it, determine whether there are
18 concerns about the process that the risk assessment
19 underwent.

02:18 20 Second was to see if there is -- if there
21 are information gaps or data gaps, if you will, in
22 the report, in the risk assessment. And then
23 basically it's appeared that when pathways were
24 absent, in order to follow the standard approach, A,
02:19 25 address whether a pathway is present; and if they

1 are, conduct the risk assessment per guidelines. And
2 that's what I did.

3 Q And those things were all related to a
4 critique of the HHRA?

02:19 5 A In this case, yes. Those would be the
6 components. I don't know if I have them all, but
7 those are certainly some of the key ones.

8 Q And the other portion of your report you
9 calculate a different what you call soil screening
02:19 10 level and you calculate that to be approximately
11 8 parts per million arsenic.

12 Is that fair to say?

13 A I think it's adjusted slightly to 9, 10.
14 It's a number but it's not the -- it's not really the
02:19 15 purpose of the report to calculate a specific number.
16 But it is to compare and contrast that to how the
17 risk assessment should have been done had it followed
18 traditional kind of gold standard EPA process.

19 Q Are you giving an opinion that the 250 parts
02:20 20 per million action level for arsenic in residential
21 soils that was set by the EPA is incorrect?

22 A Can you explain to me what you mean by
23 "incorrect"?

24 Q Sure.

02:20 25 Do you think that there should be a

1 different action level for the community?

2 A That's for regulatory agencies to make a
3 determination. What I am saying is that, number one,
4 the 250 is not explained in the HHRA. Number one.

02:20 5 Q That was an EPA decision. Fair to say?

6 A I have no idea.

7 Q You've reviewed the ROD for the community
8 soils, haven't you?

9 A I have, but it is an information gap, from
02:20 10 my perspective.

11 Q Okay. Is it fair to say that EPA selects
12 action levels based on human health risk assessments
13 as well as other information that the agency
14 considers?

02:21 15 A Can you give me an example of the other?

16 Q I'm asking you, in your experience as a
17 toxicologist, have you seen EPA at Superfund sites
18 select action levels that are based on factors other
19 than just a human health risk assessment?

02:21 20 A Are you -- I'm trying to understand your
21 question.

22 Q Sure.

23 A Can you rephrase that just to make sure I
24 understand?

02:21 25 Q Do you --

1 In your experience, when EPA chooses action
2 levels for cleanup at Superfund sites, does it
3 consider factors in addition to human health risk
4 assessments?

02:21 5 A For clarification, could you give me an
6 example?

7 Q I'm asking you if you can think of an
8 example. Or if you know whether consideration of
9 other factors is part of EPA's process?

02:21 10 A Certainly EPA considers other factors aside
11 from the risk assessment, but it's clear that the
12 risk assessment provides significant input to that
13 process.

14 Q Are you --

02:22 15 And I think you just said you are not giving
16 an opinion about what the action level at -- for a
17 residential soils cleanup within the Anaconda
18 Superfund site should be.

19 Is that fair to say?

02:22 20 MR. STALPES: And I'm going to object as vague.
21 I don't know if you are saying what the EPA should
22 have done. I don't know what you mean by that.

23 THE WITNESS: Can you rephrase the question,
24 please, or repeat it.

02:22 25 BY MS. STEVENSON:

1 Q Sure.

2 Are you giving an opinion about what the
3 action level for residential soils cleanup at the
4 Anaconda Superfund site should be to protect human
02:22 5 health?

6 A An agency comes up with its decisions and
7 has many factors, and that's not what I've been asked
8 to do.

9 Q Okay.

02:22 10 A But what I've been asked to do is whether or
11 not this human health risk assessment has followed
12 standard guidelines to come up with the values that
13 it did, and the answer is no.

14 Q Are you giving an opinion in this case that
02:23 15 any plaintiff in the case has suffered any health
16 effects from exposure to arsenic in their residential
17 soil?

18 A I haven't been asked that, to do that.

19 Q Are you giving an opinion that there is any
02:23 20 environmental damage to any of plaintiffs' properties
21 in this case?

22 A Can you give me an example what you mean by
23 "environmental damage"?

24 Q Sure.

02:23 25 Areas where vegetation won't grow, for

1 instance.

2 A I haven't been asked to do that.

3 Q Do you have an opinion about whether the
4 250 part per million arsenic action level at the
02:23 5 Anaconda smelter site is protective of human health
6 for residents of Opportunity?

7 A If I understood your question, do I -- was
8 I asked to develop opinion that the 250 was not
9 protective of human health?

02:24 10 Q Correct.

11 A I wasn't asked that question.

12 Q I'm going to hand you Dr. Tsuji's report as
13 well.

14 (Deposition Exhibit 6 was
02:24 15 marked for identification and is
16 attached hereto.)

17 BY MS. STEVENSON:

18 Q I'll direct you to page 2 of her report.
19 Dr. Tsuji's first opinion that she gives is that
02:25 20 residents of the community, and she defines community
21 as the residents of Opportunity and Crackerville that
22 are the plaintiffs in this case.

23 "Residents of the community are protected
24 from health risks from exposure to metals related to
02:25 25 the former mining and smelting operations by the EPA

1 Superfund RODs, which included involvement of the
2 Agency for Toxic Substances and Disease Registry and
3 state and local health authorities."

4 Do you either agree or disagree with that
02:25 5 opinion?

6 A I don't know how that opinion was derived to
7 make an evaluation.

8 Q Okay. So you don't have an opinion one way
9 or the other?

02:25 10 A I would say that the process of
11 demonstrating a human health risk assessment as it's
12 requested and stated by the EPA guidelines was not
13 followed and, therefore, it's -- one is not able to
14 determine the answer to that question.

02:26 15 Q Do you have an opinion that any of the
16 plaintiffs in this case are exposed to any actual
17 health risks based on the arsenic concentrations
18 that are present in their residential soil on their
19 properties?

02:26 20 A Pretty much the same answer to that.
21 Based on my review of the HHRA, which leaves out
22 significant pathways, and some of the determinations
23 that were made or decisions that were made that are
24 absent in terms of support, including Dr. Tsuji's
02:27 25 expert report and rebuttal that do not fill in those

1 information gaps, I can't determine that.

2 Q So just to make sure I understand. Your
3 opinion is that you cannot determine whether there
4 are any actual health risks to the plaintiffs in this
02:27 5 case from arsenic concentrations in their residential
6 soil.

7 Is that fair to say?

8 MR. STALPES: Object to the form and vague as
9 well.

02:27 10 THE WITNESS: Can you repeat what I just said,
11 please?

12 (The record was read as follows:

13 "ANSWER: Pretty much the same
14 answer to that.

15 "Based on my review of the HHRA,
16 which leaves out significant pathways,
17 and some of the determinations that
18 were made or decisions that were made
19 that are absent in terms of support,
20 including Dr. Tsuji's expert report
21 and rebuttal that do not fill in those
22 information gaps, I can't determine
23 that.")

24 BY MS. STEVENSON:

02:28 25 Q So the answer is you can't determine whether

1 there are actual health risks or not.

2 Is that fair to say?

3 A Again, I wasn't asked to determine health
4 risks. What I was asked was did this HHRA follow
02:28 5 standard EPA guidelines and conduct a risk assessment
6 which would then inform other processes depending on
7 what the answer was.

8 Q Okay. And basically, I'm just trying to
9 make sure that you are not going to get up at trial
02:28 10 and say that the plaintiffs in this case have actual
11 health risks from the arsenic concentrations on their
12 property. I, Dr. Richard Pleus, have determined
13 that.

14 Am I correct about that?

02:28 15 MR. STALPES: I'm going to object. The report
16 speaks for itself. It talks about the cancer risk
17 throughout. I don't know if you are trying to
18 exclude him.

19 MS. STEVENSON: I'm asking Dr. Pleus if he's
02:29 20 going to testify at trial that any plaintiff in this
21 case is exposed to any actual health risk based on
22 arsenic concentrations on their property.

23 THE WITNESS: Again, the process of a human
24 health risk assessment is to -- there's several steps
02:29 25 that go along, and this first one was is there an

1 indication that we have potential health risk or not.
2 The answer is you don't know the answer to the
3 question until it's done correctly and then
4 follow-up actions occur.

02:29 5 What I'm saying here is that following
6 standard guidelines, it wasn't done correctly. And
7 so those later questions that you are alluding to,
8 which I haven't been asked to follow, to conduct,
9 can't be answered at this particular time, only
02:29 10 because the process isn't complete.

11 BY MS. STEVENSON:

12 Q Well, you redid the process. Is that fair
13 to say? You calculated your own soil screening
14 level?

02:30 15 A Yes, in the end I ended up coming up with
16 a screening value but the -- the report does pretty
17 much the same, as well. The CDM, the HHRA provides
18 a table, for example, that's basically orphaned in
19 the document, and listing risks of cancer according
02:30 20 to the guidelines that are, at this point,
21 uninterpretable.

22 Q All right. But you have corrected those
23 issues with your own version of the HHRA; is that
24 correct?

02:30 25 A I've certainly followed EPA guidelines and

1 I -- if you followed them along the process using
2 pretty much the same data that the HHRA used, I come
3 up with answers that are different than what that
4 HHRA did.

02:30 5 Q Do you think that exposure to arsenic above
6 8 parts per million in residential soil is a risk to
7 human health?

8 A That's not the purpose of that value. It
9 is the screening value that's the end of the
02:31 10 calculations. But value is only to demonstrate the
11 discrepancy between what the EPA has stated, which is
12 250 based on this risk assessment, versus if you were
13 to follow through with this risk assessment, even
14 using the HHRA's own data, regardless if it's mine or
02:31 15 theirs, the values are largely different and
16 unexplained.

17 Q Do you have any opinion about what soil
18 arsenic concentration would be appropriate for this
19 community, Opportunity and Crackerville, to
02:31 20 sufficiently protect human health?

21 A I wasn't asked to specifically do that.
22 That would require more information also. I think
23 that's pretty much a regulatory process that gets
24 involved as well, and that's not what I was asked to
02:32 25 look at either.

1 Q And you are not giving an opinion on that?

2 MR. STALPES: I'm just going to object. I think
3 he's confused by your questions. The report is
4 pretty detailed in all of this.

02:32 5 MS. STEVENSON: I think the questions are pretty
6 clear.

7 Q What additional information would you need
8 to determine a safe action level for arsenic in
9 residential soil in this community?

02:32 10 A Well, I would have to think about what that
11 would be. But the first step is to conduct this
12 level of risk assessment and, if it warrants further
13 investigation, then to move on to the next phases.

14 Q You haven't told any plaintiff in this case
02:33 15 that their property is unsafe, have you?

16 A I haven't been asked to make that
17 determination.

18 Q Is there a process by which people can
19 provide comments to the EPA at active Superfund sites
02:33 20 that relate to the remedy that's been selected?

21 MR. STALPES: Objection; foundation.

22 THE WITNESS: I'm aware in general EPA has a
23 process for allowing comments on a number of actions.
24 I don't know whether it was specifically on this one
02:33 25 or not.

1 BY MS. STEVENSON:

2 Q Have you ever submitted comments to EPA when
3 it's in the -- at an active Superfund site regarding
4 a proposed remedy?

02:34 5 A I may have. I don't recall right now.

6 Q Have you brought any of the concerns that
7 you raise in your expert report to the attention of
8 the EPA?

9 A I haven't been asked to do that.

02:34 10 Q Do you think it would be important that EPA
11 consider the concerns that you've raised in your
12 expert report?

13 A I think the agency would be interested to
14 understand how this HHRA is different from how its
02:34 15 guidelines are.

16 Q And if you're -- the concerns that you raise
17 were accepted by the EPA, they could change the
18 remedy for the Anaconda smelter Superfund site.

19 Is that fair to say?

02:34 20 A They could.

21 MR. STALPES: Objection; speculation.

22 THE WITNESS: I don't know. They could
23 possibly.

24 BY MS. STEVENSON:

02:35 25 Q Just to cover just a couple general

1 toxicological principles.

2 Would you agree with me that one of the
3 fundamental principles of toxicology is that all
4 things are poison under some exposure conditions but
02:35 5 not under others?

6 A Are you paraphrasing Paracelsus? If so,
7 that's not the correct paraphrase.

8 Q I actually just quoted this from one of your
9 book chapters.

02:35 10 A I don't recall ever writing that.

11 Q Okay.

12 A Can you point to me where that is written?

13 Q Chapter 39 of toxicology at page 555.

14 A Sorry?

02:36 15 Q In the chapter of Practical Approach to
16 Environmental Medicine.

17 MR. STALPES: You haven't brought that with you,
18 have you?

19 MS. STEVENSON: I can probably pull it out if we
02:36 20 need to.

21 THE WITNESS: I would be interested. I have a
22 co-author in that.

23 BY MS. STEVENSON:

24 Q That's not a phrase that's familiar to you?

02:36 25 A It may be in that textbook, but that's not

1 the correct paraphrase of Paracelsus, which is what I
2 was thinking you were referring to.

3 Q How would you paraphrase Paracelsus?

4 A All things are toxic. It depends on the
02:36 5 dose. I mean, that's a simple way to put it.

6 Q The dose makes the poison?

7 A Yes.

8 Q And that means that certain chemicals can be
9 toxic but only if they reach a certain dose.

02:36 10 Is that fair to say?

11 A Dose, exposure, yes. Frequency, things like
12 that.

13 Q Do you agree with me that the detection of a
14 chemical does not mean that toxicity will occur?

02:37 15 A I agree with that, especially if it's a low
16 detection limit.

17 Q Right.

18 Would you agree with me that most chemicals
19 have a dose threshold that must be met or exceeded
02:37 20 before there's any adverse effect?

21 A In general, that's a correct toxicological
22 principle.

23 Q Do you have an opinion as to whether that
24 principle applies to arsenic?

02:37 25 A I think it depends on the species of arsenic

1 and what end points you are looking at.

2 Q What about for cancer?

3 A I think in general, the way that the risk
4 assessment process looks as a probability of
02:37 5 developing cancer. And so that's not a -- that's
6 generally considered a more linear approach to that
7 versus a threshold approach.

8 Q Do you have an understanding of the
9 biological mechanism by which arsenic can cause
02:38 10 cancer?

11 A I have some knowledge of it. The
12 definitive, absolutely essential understood way that
13 it is, I don't think it's been -- I'm not aware that
14 it's been specifically determined to that degree.

02:38 15 Q What is your understanding?

16 A That as arsenic is -- enters the body and
17 biotransformed, there are metabolites that can affect
18 the -- either genetic or re- -- not reproductive, the
19 protein production and transcription on a cellular
02:39 20 basis.

21 Q Is that the only mechanism by which you
22 understand that arsenic can cause cancer?

23 A It's certainly one of the ways that I'm
24 familiar with. There may be others.

02:39 25 Q And are you aware of any current research on

1 that issue?

2 A I don't --

3 Do you have an example?

4 Q I'm just asking you.

02:39 5 A Nothing that I can recall at the moment.

6 Q You would agree with me that arsenic is a
7 metal that occurs naturally in soil and water?

8 A It is a natural metal, yes.

9 Q Thanks.

02:39 10 And that the concentrations, for example,
11 the arsenic occurs in soil very widely throughout the
12 country?

13 A They do vary. I don't know what you mean by
14 "widely" but they do vary.

02:40 15 Q And you've heard of naturally occurring
16 substances referred to as background levels of that
17 substance, for instance, in soil?

18 A Yes.

19 Q Do you have any opinion about what
02:40 20 background levels arsenic are in Montana?

21 A I've read a document by the State of Montana
22 where it conducted an analysis, I think it was
23 statewide, so not just the Anaconda/Opportunity area.
24 And I think their 90th or 95th percentile was
02:40 25 40 milligrams per kilogram.

1 Q 40 parts per million?

2 A 40 parts per million.

3 Q Do you have any opinion at all whether
4 anything needs to be done to the plaintiffs'
02:41 5 properties in this case to make them safe for their
6 use?

7 A Well, I go back to the -- my first point,
8 and that is based on the HHRA, which omits pathways
9 or analysis or certainly doesn't adequately explain
02:41 10 why they're not included, that the answer to the
11 question is more work needs to be done in order to
12 make that assessment --

13 Q Okay.

14 A -- from a toxicological risk assessment
02:42 15 perspective.

16 Q You are not suggesting by your report that
17 their properties should be cleaned up to 8 parts per
18 million arsenic?

19 A I wasn't asked to make that determination.

02:42 20 Q In your report, you calculate a soil
21 screening level that you calculate to be
22 approximately 8 parts per million which you've now
23 revised to 9.7 parts per million.

24 Is that fair to say?

02:42 25 A Yes.

1 Q And what did you mean by soil screening
2 level?

3 A Well, what I meant by it is again through
4 the process for which the guidelines state, and that
02:43 5 is if you conduct a baseline risk assessment, does
6 the value at the end of that indicate that further
7 analysis needs to be done or not.

8 Q Is that a process that is defined in some
9 sort of EPA guidance?

02:43 10 A It's in many EPA documents. There's
11 numerous ones.

12 MS. STEVENSON: Let's take a break. I
13 remembered.

14 THE VIDEOGRAPHER: Going off the record. The
02:43 15 time now is approximately 2:44 p.m. This is the end
16 of disk number 2 in the deposition of Richard Pleus.

17 (Off the record.)

18 THE VIDEOGRAPHER: Going back on the record.
19 The time now is approximately 2:55 p.m. This is the
02:55 20 beginning of disk number 3 in the deposition of
21 Richard Pleus.

22 (Deposition Exhibit 7 was
23 marked for identification and is
24 attached hereto.)

02:55 25 BY MS. STEVENSON:

1 Q Dr. Pleus, Exhibit 7 is the "EPA Soil
2 Screening Guidance: User's Guide," and I believe you
3 cite this several times in your report.

4 Is that accurate?

02:55 5 A Yes.

6 Q Now, is the soils screening number that you
7 calculate in your report the type of soil screening
8 number that's described in this guidance?

9 A Can you be more specific?

02:55 10 Q Sure.

11 This guidance gives you direction on
12 calculating a soil screening level, correct?

13 A It does, yes.

14 Q It's to be used for certain purposes?

02:55 15 A Yes.

16 Q Is the soil screening level that you have
17 developed in your report the same as the soil
18 screening levels that are described in this guidance?

19 A Let me take a look.

02:56 20 MR. STALPES: I'll object looking at this
21 document as vague. The document talks about
22 different kinds of screening levels.

23 THE WITNESS: So is there more -- I've looked
24 over the document. Is there more precise -- I'm not
02:58 25 quite sure I follow your question just yet. This is,

1 you know, a number of pages.

2 Is there something that you can point to
3 where your --

4 BY MS. STEVENSON:

02:58 5 Q Well, sure. For instance, you base your
6 soil screening level on a target cancer risk rate of
7 1 times 10 to the minus 5.

8 Is that fair to say?

9 A Yes.

02:58 10 Q Did you get that number from this document?

11 A No.

12 Q Okay. Where did you get that number?

13 A That's a document -- there are several EPA
14 documents that give a range from 1 times 10 to the
02:58 15 minus 6 to 1 times 10 to the minus for a general
16 acceptable barrier.

17 Q How did you choose 1 times 10 to the minus 5
18 out of that range?

19 A Well, I think there is one other piece of
02:58 20 information, and that is that the State of Montana
21 has a risk level for cancer set at 1 times 10 to the
22 minus 5 as well. On one hand, 1 times 10 to the
23 minus 6 provides a certain level of cancer risk and
24 1 times 10 to the minus 4 has a higher level of
02:59 25 cancer risk. The determination was a combination of

1 attempting to come up with the 250 parts per million
2 and looking at what other guidance could provide a
3 reasonable degree of risk level.

4 Q Did you rely on this document Exhibit 7 for
02:59 5 anything in your report?

6 A Yes. It provides, again, general
7 information as to approach. It gives information on
8 how to conduct it. It provides limitations to -- I
9 mean, procedures to determining how to calculate
02:59 10 screening levels. So from that perspective, it's one
11 of many documents that I've used.

12 Q And you would agree with me that the
13 screening levels, soil screening levels described
14 in this document are not intended to be cleanup
03:00 15 standards.

16 Is that fair to say?

17 A I think if you are referring to some
18 particular sentence in this document --

19 Q I'm looking at page 1.

03:00 20 A Okay.

21 Q It says "SSLs are not national cleanup
22 standards" in bold.

23 Do you see that?

24 A I do.

03:00 25 Q So is it fair to say that this document is

1 not intended to provide guidance on establishing a
2 clean-up level?

3 A I'm not quite sure that's accurate. I mean,
4 even on page 3 it talks about "SSLs can be used as
03:01 5 preliminary remediation goals," for example. I think
6 it goes to the heart of the matter of determining
7 whether there's an unacceptable risk to human health.
8 And when you have a value that is, at least in this
9 HHRA, that's what, 8 times -- my calculation is
03:01 10 8 times 10 to the minus 5th, which excludes the
11 pathways, which would indicate that there's an
12 unacceptable risk to human health, and it excludes
13 pathways, I think it does raise that issue.

14 Q Do you understand a preliminary remediation
03:01 15 goal to be the same thing as an action level,
16 clean-up action level?

17 A It's not the same specifically, that's
18 correct. But it says here it can be used as a PRG.
19 (Deposition Exhibit 8 was
03:02 20 marked for identification and is
21 attached hereto.)

22 BY MS. STEVENSON:

23 Q Handing what's been marked as Exhibit 8.
24 Is this a document that you considered in
03:02 25 preparing your report?

1 A So I think the answer to your question is
2 did I use -- did I use this particular memorandum in
3 my evaluation of the work that I had done?

4 Q Yes.

03:06 5 A Much of this information is repeated in
6 other documents that I have read. Whether I read
7 this particular one or not, I don't recall. But
8 there are -- this type of information is repeated in
9 a number of documents.

03:06 10 Q Would you agree with me that this is EPA
11 guidance on the "Role of the Baseline Risk Assessment
12 and Superfund Remedy Selection Decisions"?

13 A That's the subject title.

14 Q And the first bullet there on page 1 says
03:06 15 "Where the cumulative carcinogenic site risk to an
16 individual based on reasonable maximum exposure for
17 both current and future land use is less than 10 to
18 the minus 4 and the noncarcinogen hazard quotient is
19 less than 1, action generally is not warranted unless
03:07 20 there are adverse environmental impacts," do you see?

21 A Yes. You read that correctly.

22 Q And does that mean that if the risk is less
23 than 10 to the minus 4, no action is warranted? Is
24 that your general understanding of that?

03:07 25 A Well, I don't --

1 MR. STALPES: Objection; mischaracterizes the
2 document.

3 Go ahead.

4 THE WITNESS: Well, I think that there is
03:07 5 several other pages where it goes into a broader
6 discussion and -- of whether that's actually the
7 case, and it does contradict much of the
8 documentation that EPA also has out there on the
9 approach to assessing cancer risk.

03:07 10 BY MS. STEVENSON:

11 Q Do you think that an excess cancer risk of
12 1 times 10 to the minus 4 is an unacceptable risk?

13 A I think that EPA has determined that as a
14 border from which almost all risk assessments, when
03:08 15 they start to come close to that value, either, one,
16 checks for the completeness because it is raising the
17 concern of an unacceptable cancer risk to that
18 population.

19 Q And when you talk about -- let me just look
03:08 20 at a page in your report here.

21 When you talk about excess cancer risk as
22 calculated by a risk assessment, that's not
23 calculating any actual risk to any actual person.

24 Is that fair to say?

03:08 25 A Are you looking at a particular page?

1 Q I'm just asking a question. I'm not quoting
2 anything.

3 A This is a -- the risk assessment process
4 and the baseline risk assessment process is one that
03:09 5 looks at current and future uses of this property --
6 of land and determines using the guidelines whether
7 or not there is an un- -- a cancer risk that is
8 unacceptable and -- according to EPA guidance.
9 That's what the risk assessment does.

03:09 10 Q But it's not a calculation of any actual
11 risk to any actual person in the community.

12 Is that fair to say?

13 A Well, I think it actually represents a
14 hypothetical individual where it can occur;
03:09 15 otherwise, why would you go through that exercise.
16 And, you know, at the 250, which is 8 times 10 to the
17 minus 5, based on what my calculations are, that's
18 pretty close and it excludes pathways. And so those
19 individuals at 250 would be posed with an
03:10 20 unacceptable cancer risk.

21 Q 8 times 10 to the minus 5 is an unacceptable
22 cancer risk?

23 A Especially when you've not included certain
24 pathways.

03:10 25 Q Assuming all pathways were included, is

1 8 times 10 to the minus 5 an unacceptable cancer
2 risk?

3 A At least in my experience, it would be
4 something that we would look at much more carefully
03:10 5 because it is up against the 1 times 10 to the
6 minus 4 cancer risk.

7 Q Are you aware of sites where EPA has
8 approved remedies that have cancer risk above
9 1 times 10 to the minus 4?

03:10 10 A Yes.

11 Q And so at times EPA used that risk as
12 acceptable.

13 Is that fair to say?

14 A Well, not necessarily they're identical
03:11 15 situations. So, for example, a land area that will
16 never have residential use, in other words, it's
17 fenced off, will always be fenced off or will be
18 industrial, will be -- will have a different set of
19 criteria for their evaluation than an area that is
03:11 20 residential.

21 Q I'm talking about residential areas.

22 Are you aware of any residential areas where
23 EPA has approved an excess cancer risk of greater
24 than 1 times 10 to the minus 4?

03:11 25 A You know, I could envision that there might

1 be, but I'm not aware of one at the moment.

2 Q And but that --

3 A It's rare.

4 Q -- wouldn't be outside of their guidelines
03:11 5 to do so?

6 A It would be rare. And it would be, I would
7 think, fairly extraordinary circumstances given the
8 guidelines as they are written.

9 Q And you selected 1 times 10 to the minus 5
03:12 10 for your target risk level because it was between
11 1 times 10 to the minus 4 and 1 times 10 to the
12 minus 6?

13 MR. STALPES: Objection; asked and answered.

14 THE WITNESS: Well, we could be -- I could have
03:12 15 gotten the most conservative and used 1 times 10 to
16 the minus 6, which is often what EPA uses. But I
17 think my experience with states and again, Montana
18 has its recommended cancer risk level at 1 times 10
19 to the minus 5th, that seemed to be appropriate,
03:12 20 given the document that I reviewed on that.

21 BY MS. STEVENSON:

22 Q You would agree with me that the State of
23 Montana approved the remedy that's in place for the
24 Anaconda Superfund site?

03:12 25 A I assume so. I don't know that for a fact,

1 but I assume so.

2 Q Do you think it's appropriate that clean-up
3 action levels vary at different Superfund sites?

4 A They -- I think what you are getting to is
03:13 5 more of a risk management decision, which is more of
6 an agency-type decision. And there's more than just
7 the risk assessment that goes into that.

8 Q So is that a yes?

9 A I don't --

03:13 10 Q Is it appropriate for clean-up action levels
11 to vary among Superfund sites?

12 A Is it appropriate?

13 Q Yes.

14 A I don't know if it's appropriate. It
03:13 15 happens.

16 Q Do you think that it's inappropriate that
17 that happens?

18 A I don't know how to put my arms around all
19 of the possibilities that that question entails.

03:14 20 Q Do you agree that EPA has a preference to
21 use site specific data when it's available?

22 A Yes. EPA likes to use site specific data,
23 if it's possible.

24 Q And site specific data could cause an action
03:14 25 level to vary from one site to another depending on

1 the availability of that data?

2 A The site specific information, if
3 accessible, reliable, fills important data gaps, of
4 course it could potentially use that. But if it
03:14 5 misses that information, then I don't understand how
6 that could be used appropriately.

7 Q But the availability of that data could
8 cause action levels to be different at different
9 Superfund sites?

03:15 10 A That would be one rationale that would make
11 sense to me is that the quality and the availability
12 of pertinent data that's site specific can be useful,
13 yes.

14 Q Are you giving any opinion in this case that
03:15 15 exposure to residential soil at 250 parts per million
16 arsenic is injurious to health?

17 A I'm saying that at 250 parts per million, it
18 is an unacceptable cancer risk to those individuals
19 based on the process that I followed.

03:15 20 Q Okay. So you are giving an opinion that
21 there is an unacceptable cancer risk at 250 parts
22 per million in the Opportunity community?

23 A I'm saying that the way that I calculated
24 the HHRA, that the levels that result, 250 is not
03:16 25 substantiated. The values that even the report has

1 at cancer risks at 1 times 10 to the minus 5 and 1
2 times 10 to the minus 2 are much smaller; therefore,
3 the 250 does present an unacceptable cancer risk that
4 is unexplained.

03:16 5 Q And that's a risk that you calculate to be
6 I think 3.6 times 10 to the minus 4; is that right?

7 A That sounds -- if it's not exact, it's
8 close.

9 Q And in your opinion, that is an unacceptable
03:16 10 cancer risk?

11 A In what data that were used in the HHRA,
12 which I pretty much followed, I didn't really use
13 much different data than the HHRA did, other than I
14 included pathways, all pathways, and I found that the
03:17 15 cancer risk was over 1 times 10 to the minus 4. And
16 that is a concern.

17 Q It's a concern?

18 A Of an increased cancer risk, that those
19 individuals living under that situation would have
03:17 20 an unacceptable cancer risk.

21 Q Does it present any concern of an actual
22 health risk to any of the plaintiffs?

23 MR. STALPES: Objection; asked and answered.

24 MS. STEVENSON: Fair enough.

03:17 25 MR. STALPES: You can go ahead and answer it.

1 The question's still pending, go ahead.

2 MS. STEVENSON: It's okay.

3 THE WITNESS: Do you want to repeat that,
4 please?

03:17 5 MS. STEVENSON: It's okay.

6 Q Do you -- and I'm sorry.

7 A Do you want to repeat?

8 Q I think you are not giving an opinion about
9 what soil action level would be required to remove
03:18 10 that risk.

11 Is that fair to say?

12 Is there a soil action level that you would
13 say there is no unacceptable risk?

14 A Well, I think there's infinite numbers of
03:18 15 levels below the 250. For example, doesn't the --
16 the CDM, the HHRA actually has 1 times 10 to the
17 minus 5th cancer risk, which is below 1 times 10 to
18 the minus 4. Isn't it in the 20 parts per million,
19 like 20 to 30 parts per million? Isn't that in the
03:18 20 document?

21 Q I'm just asking are you giving an opinion.
22 I haven't seen it in your report as to what that
23 level should be.

24 A No. There are other documents that provide
03:18 25 support for the work that I've done.

1 Q Have you told any plaintiff in this case
2 to do anything to reduce their risk of exposure to
3 arsenic in their soil?

4 A No.

03:19 5 Q Have you told them to stop eating vegetables
6 from their gardens?

7 A No.

8 Q Have you told them not to use their yards?

9 A No.

03:19 10 Q Have you told them to take any special
11 precautions to not ingest soil or dust?

12 A No.

13 Q Have you told them not to let children play
14 in their yards?

03:19 15 A No.

16 Q Have you told them not to let the pets use
17 their yards?

18 A No.

19 Q Do you think you should do that to reduce
03:19 20 their risk?

21 A I think what should be done is the HHRA
22 should be done according to the gold standard
23 guidelines.

24 Q And that's something that would happen
03:20 25 through the EPA?

1 A I guess many organizations could do that.
2 Right now, as it's calculated, using standard best
3 science, pretty much the same data that they use, it
4 comes up with values that are at or greater than
03:20 5 1 times 10 to the minus 4, which is outside EPA's
6 guidance.

7 Q Would you agree with me that many people in
8 the northwestern part of the United States live at
9 properties with soil that has more than 8 parts per
03:20 10 million arsenic on it?

11 A Did you say in the Pacific Northwest?

12 Q Yes.

13 A I'm sure there's locations, as I mentioned,
14 Montana did a survey and came up with 40 for their
03:20 15 90 percent or 95th percentile soil background level.

16 Q Do those people have any unacceptable cancer
17 risk associated with that?

18 A Well, I didn't ask to look at it. I'm just
19 telling you background levels.

03:21 20 Q You don't know?

21 A Depends on the exposure pathways and the
22 risk assessment process. That would determine that
23 for a particular location.

24 Q And I take it in your critique of the HHRA
03:21 25 and your subsequent analysis that you are trying to

1 improve on the HHRA that was done by CDM for the EPA
2 back in 1996?

3 A Improve upon it?

4 Q Yes.

03:22 5 A I don't know what you mean by "improve."

6 Q I think you pointed out that it has errors
7 that you think you have corrected.

8 Is that fair to say?

9 A I believe that it did not follow the process
03:22 10 as I followed it, yes.

11 Q And that would be an improvement, correct?

12 A I'm just saying whether it's done well
13 according to guidelines or not.

14 Q And you think the way you suggested it be
03:22 15 done would be done well and according to guidelines;
16 is that correct?

17 A I think it should be done according to
18 guidelines and that for those issues that there
19 should be a transparent process of why there was a
03:22 20 determination to do one thing or another so that
21 people when they read it can follow it.

22 Q And that's what you have done in your risk
23 assessment?

24 A Yes, I believe I've been pretty specific and
03:22 25 transparent.

1 Q And that would be better than what you think
2 EPA did in their assessment?

3 MR. STALPES: Object to the form.

4 THE WITNESS: Well, I don't know about EPA in
03:23 5 general, but I would say that the CDM risk assessment
6 for which we are talking about could be greatly
7 improved. It's -- it's underestimating the cancer
8 risk based on its own guidelines, so I can't explain
9 why it deviated that way.

03:23 10 BY MS. STEVENSON:

11 Q Do you have any evidence that you are
12 relying on in this case that any plaintiff in this
13 case has suffered any actual health effect from
14 exposure to arsenic in their residential soil?

03:24 15 MR. STALPES: Objection; asked and answered.

16 THE WITNESS: Well, to the degree that they
17 have, the HHRA is expressing an unacceptable cancer
18 risk as defined by EPA, the answer is yes, cancer.

19 BY MS. STEVENSON:

03:24 20 Q Okay. But that doesn't apply to any
21 individual plaintiff in this case, does it?

22 A What do you mean by individual, like Mr. X
23 and Ms. Y or something like that? Or are you
24 referring to something else?

03:24 25 Q Sure.

1 The risk assessment, the HHRA risk
2 assessment incorporates a bunch of hypothetical
3 assumptions, correct?

4 A Well, they are based on pathways of
03:24 5 exposures that exist. They are based on a
6 reasonable -- reasonable maximum exposure that could
7 occur. They are based on data regarding the amounts
8 in the soil and other media as well.

9 So I think the answer is that they are
03:25 10 raising the issue of cancer risk to a population that
11 is either there or could be there in the future.

12 Q And my question was, do you have any data to
13 show that any of the actual individual plaintiffs in
14 this case have suffered any health effects from
03:25 15 exposure to arsenic?

16 A I have not been asked to look at that.

17 Q Have you suggested to any plaintiff that
18 they should have any medical testing done to find out
19 if they have been exposed to arsenic?

03:26 20 A No.

21 Q Is there anything -- any reason why
22 plaintiff couldn't go and get medical testing to find
23 out if they had any actual arsenic exposure?

24 A Is there any -- I'm sorry, again?

03:26 25 Q Any reason why a plaintiff couldn't go and

1 have medical testing to find out if they have been
2 exposed to any -- actually exposed to any arsenic?

3 MR. STALPES: Objection; foundation.

4 THE WITNESS: I think some of the studies
03:26 5 already demonstrate that there's exposure at the
6 site.

7 BY MS. STEVENSON:

8 Q In Opportunity?

9 A Well, in the Anaconda area.

03:26 10 Q Opportunity specifically?

11 A I would have to look at the individual
12 studies, but the urine study that Dr. Tsuji is
13 referring to presents evidence of exposure.

14 Q Okay. For people in Opportunity or
03:26 15 elsewhere within the Anaconda smelter Superfund site?

16 A I would have to look more specifically at
17 that.

18 Q Can you recall how the urine levels of the
19 children studied in Opportunity compared to the
03:27 20 children studied in the control area?

21 A My understanding was that they are, in
22 general, elevated compared to others as well in the
23 country and that there is some question about the
24 methodology that was used as well to determine
03:27 25 whether that can be accurately assessed.

1 Q You didn't review any medical records for
2 any plaintiff in this case, did you?

3 A No.

4 Q And you didn't request to do any
03:27 5 biomonitoring of any of the plaintiffs, correct?

6 A I did not.

7 Q Are there medical tests that can be done to
8 find out whether a person's been exposed to arsenic?

9 A Yes.

03:27 10 Q What are those?

11 A Well, you could do it -- I think the
12 question is how to do it and what does that -- what
13 would that require. But there's anything from tissue
14 samples of some sort, urine, which include urine or
03:28 15 blood, hair, nails. But again, each one has
16 strengths and limitations and then the frequency and
17 kind of the protocol that would be necessary would
18 need to be considered pretty carefully.

19 Q But if a person's been exposed to arsenic,
03:28 20 you can detect that in their urine.

21 Is that fair to say?

22 A If you are just asking is there a method to
23 detect arsenic in body tissues, the answer's yes.
24 But interpreting exactly the -- what that means
03:28 25 requires a careful assessment.

1 Q Are you aware of any evidence anywhere of
2 any person in the Anaconda smelter Superfund site
3 having an adverse health effect from exposure to
4 arsenic in residential soil?

03:29 5 A I haven't looked at those data, so I don't
6 know the answer to that.

7 Q Would you agree with me that the best
8 evidence of human toxicity derives directly from
9 observations of exposed humans?

03:29 10 A That the best --

11 Q Evidence of human toxicity derives directly
12 from observations of exposed humans?

13 A I think it depends on what observations you
14 are talking about.

03:30 15 Q Would that sentence be true for exposure to
16 arsenic?

17 A Depending on what outcomes you are looking
18 for.

19 Q Well, if you wanted to know if a person was
03:30 20 experiencing a toxic dose of arsenic, would it be
21 best to observe the actual person?

22 A Are you saying like a clinician evaluating
23 the person? Is that what you are asking?

24 Q Would the best data about whether or not
03:30 25 that person had been exposed be available by directly

1 observing that person versus their surrounding
2 environment?

3 A Observing the person, like their behavior?
4 I'm not quite sure I'm following your question.

03:30 5 Q No. Tissue samplings, all of the ways you
6 might detect a person's exposure in health effects.

7 A Well, identifying -- doing a proper study
8 and identifying those that have the potential for
9 exposure would be key, no question. But it depends
03:31 10 on what the study design is, making sure that you are
11 looking at end points that are relevant and conducted
12 in a timely manner. Those are really -- those become
13 critical points.

14 Q And you would agree that the University of
03:31 15 Cincinnati, the urine arsenic study that we have been
16 talking about, did attempt to actually take
17 observations of individuals who could be exposed to
18 arsenic in the Anaconda smelter Superfund site.

19 Is that fair to say?

03:31 20 A Well, I think that the word -- it's a
21 difficult study and a difficult one to do well,
22 as well, just because of the urine volumes on a
23 day-to-day base and the changes in urine, kind of the
24 dilution of urine and things on that line.

03:31 25 So it's not a trivial exercise to do that

1 type of study well. Certainly the study they did, it
2 is what it is, but there are opportunities for
3 improvement on the study design.

4 Q Well, every study has limitations, doesn't
03:32 5 it?

6 A Not quite. Some have bigger ones than
7 others.

8 Q Okay. How many children were studied in
9 the Anaconda smelter Superfund site area in that
03:32 10 University of Cincinnati study?

11 MR. STALPES: Object to the form.

12 THE WITNESS: How many children? I think
13 hundreds. I don't remember the exact number.

14 BY MS. STEVENSON:

03:32 15 Q More than 400; is that right?

16 A Sounds vaguely familiar.

17 Q And do you recall what level of
18 participation the study had for families in the area?

19 A Not offhand, but I would -- I believe it was
03:32 20 something around the at least 50 percentile.

21 Q 80-plus some, correct?

22 A I don't know.

23 MR. STALPES: Objection.

24 THE WITNESS: I said 50.

03:32 25 MR. STALPES: If you are going to quiz him on

1 numbers and the study -- you want to show him the
2 study?

3 BY MS. STEVENSON:

4 Q Are you aware of any arsenic exposure
03:33 5 biomonitoring study that is more thorough than the
6 University of Cincinnati study?

7 A I don't know. I don't have an answer to
8 that question.

9 Q You can't tell me about one sitting here
03:33 10 today?

11 A No.

12 Q Would you agree with me that that study
13 sampled soil, dust, water, all of those things in
14 addition to biological samples?

03:33 15 A That's my recollection, yes.

16 Q Can you agree that the Anaconda smelter
17 Superfund site is one of the most well-characterized
18 Superfund sites in the country?

19 MR. STALPES: Object to the form.

03:33 20 THE WITNESS: I don't know the answer to the
21 question. I certainly have read, you know, clips
22 here and there, like at the introduction of papers or
23 various documents and I think Dr. Tsuji says that as
24 well. You know, it's true that it could be the most
03:34 25 well-characterized and still be insufficient.

1 BY MS. STEVENSON:

2 Q Is there any site that you can think of that
3 is better characterized?

4 A Not offhand.

03:34 5 (Deposition Exhibit 9 was
6 marked for identification and is
7 attached hereto.)

8 BY MS. STEVENSON:

9 Q Dr. Pleus, I'm handing you the Hwang study.
03:35 10 And you would agree with me this is the published
11 version of the University of Cincinnati urine arsenic
12 study at the Anaconda smelter Superfund site?

13 A Yes.

14 Q Let me have you look at table 3.

03:35 15 A Table 3?

16 Q Yes. If you look at study area G, do you
17 recall that to be Opportunity?

18 A That's my recollection.

19 Q And this has two charts, one for total
03:35 20 arsenic and one for speciated arsenic.

21 Do you see that?

22 A I do.

23 Q And speciated arsenic is the category that
24 you are interested in in terms of assessing human
03:36 25 health.

1 Is that fair to say?

2 A Not necessarily. I think both are
3 informative.

4 Q Total arsenic includes both inorganic and
03:36 5 organic arsenic.

6 Is that fair to say?

7 A Yes.

8 Q And speciated arsenic is inorganic arsenic?

9 A I believe that's what -- I believe that's
03:36 10 what they were referring to here.

11 Q This chart reports that the speciated
12 arsenic concentration, average concentration for
13 Opportunity was 6.9.

14 Do you see that?

03:36 15 A Yes.

16 Q And then if you look a little bit down
17 further, it has the numbers for the remote areas.

18 Do you see that?

19 A Hold on. Yes.

03:36 20 Q And the average for the remote areas was
21 7.1.

22 Do you see that?

23 A I do.

24 Q So would you agree that this study concluded
03:37 25 that the speciated arsenic levels of children in

1 Opportunity was less than the speciated arsenic
2 levels of children in remote areas that were not
3 impacted by the smelter?

4 A Based on just looking at those numbers
03:37 5 without anything else, that certainly would be one
6 possible conclusion, but I don't think it's the only
7 conclusion.

8 Q But what would be another conclusion you
9 could draw from those numbers?

03:37 10 A Well, I think one concern is the number --
11 the N, if you will, the sample size, and it's
12 relatively small, given that location.

13 Q I'm sorry. What number? Oh, the number N?

14 A It's number N.

03:37 15 Q I see.

16 A Which is 22 for total and 20 for speciated.

17 And so the question becomes one of, okay, so
18 then where were the kids, where were the locations,
19 what -- what can we learn more about that particular
03:38 20 subpopulation of this whole group. And I think that
21 raises an important question about the results.

22 Q I'm sorry. The sample size raises an
23 important question about the results?

24 A The sample size can influence greatly. It
03:38 25 leads to questions such as, A, was the population

1 sufficient for the sampling to be done; B, does it --
2 where were those individuals, how were they
3 identified? Was there anything in particular about
4 those small groups, were they representative, things
03:38 5 along those lines.

6 Q Do you know what the level of participation
7 was for children in Opportunity for this study?

8 A I don't recall offhand.

9 Q Okay.

03:38 10 A Still a small population.

11 Q Is a high participation rate better than a
12 low participation rate?

13 A It's hard to say. It could be, it could not
14 be. The question is more the representative sample,
03:39 15 is it a sufficient population that represents that
16 group of kids in that area.

17 Q So if it were all of the kids, that would
18 have to represent the kids in the area, wouldn't it?

19 A Yeah, that would.

03:39 20 Q Were you aware of any significant
21 discrepancies among the sampling results for the
22 children of Opportunity?

23 Can you remember in reviewing this study
24 whether there were any significant discrepancies
03:43 25 among the children of Opportunity?

1 A I don't recall anything in this particular
2 document, but I'm kind of double-checking a couple of
3 the data tables.

4 Okay. I think I'm ready to answer your
03:45 5 question.

6 Q Is there anything that suggested that the
7 children in Opportunity had discrepancies,
8 significant discrepancies, among their sampling
9 results?

03:45 10 A There's nothing that I can recall. More of
11 the questions are related to the experimental
12 protocol.

13 Q Okay. Understanding that you have some
14 issues with the protocol, is there anything in the
03:45 15 overall results of the study that points in the
16 direction of there being health concerns for people
17 in Opportunity with respect to exposure to arsenic in
18 the residential soil?

19 A Well, I think it demonstrates that they are
03:45 20 exposed.

21 Q At any soil concentration?

22 A No. At the soil concentrations that were
23 taken during the study.

24 Q And was there a correlation between exposure
03:46 25 and soil concentration at all levels of arsenic

1 concentration in the soil?

2 A No. I would think that there are some very,
3 you know, low levels that would not necessarily be
4 detected but some at higher levels that would be.

03:46 5 Q Is it true that there wasn't any correlation
6 between arsenic exposure and arsenic soil
7 concentration until you exceeded 300 parts per
8 million in soil?

9 A Can you point specifically where you are
03:46 10 referring to?

11 Q Well, I'm looking at the figure 3 would be
12 one basis for that.

13 A I'm sorry. What was your question now that
14 I have figure 3 in front of me?

03:47 15 Q One second. Is it accurate to say that
16 there's no correlation between exposure to arsenic
17 and arsenic concentration in soil until you exceed
18 300 parts per million?

19 A I don't see how you are coming up with that,
03:47 20 given this data.

21 Q Are you aware that that was a conclusion of
22 the study?

23 A Again, is there something that you are
24 pointing to?

03:47 25 Q No, I'm not pointing to anything. I'm just

1 asking for your memory.

2 A I don't recall.

3 Q Do you recall any of the findings from the
4 study about whether or not there was a correlation
03:47 5 between exposure to arsenic and arsenic concentration
6 in soil?

7 MR. STALPES: I'm just going to object. This is
8 just quizzing him on the recollection of this here.

9 MS. STEVENSON: It's a pretty important study,
03:48 10 so we're going to quiz him.

11 THE WITNESS: You said two variables, it sounded
12 like the same, so I'm not sure I understood you.

13 BY MS. STEVENSON:

14 Q Arsenic exposure as measured through urine
03:48 15 and soil arsenic concentration. I'm just asking for
16 your memory.

17 A Well, it's not an easy question to answer,
18 because soil bioavailability could change from one
19 location to another. Again, the study has -- if it
03:48 20 has some issues with its protocol, then the data are
21 less reliable or can't be relied upon for certain
22 conclusions.

23 (Deposition Exhibits 10 and 11
24 were marked for identification and
03:49 25 are attached hereto.)

1 BY MS. STEVENSON:

2 Q Dr. Pleus, Exhibit 11 is your rebuttal
3 report, correct?

4 A Yes.

03:49 5 Q Looking at the bottom of page 10 of your
6 rebuttal reports, you are talking about the Hwang
7 University of Cincinnati study that we --

8 Oh, I don't have an extra copy. It's his
9 rebuttal report.

03:49 10 We were talking about the University of
11 Cincinnati study, the Hwang study, which you are
12 discussing on page 10 of your rebuttal report.

13 Do you see that?

14 A I do.

03:50 15 Q And at the bottom you say, "The effect of
16 soil arsenic on urinary levels is illustrated in
17 figure 3" -- which we were just looking at, correct?

18 A Uh-huh.

19 Q -- "which shows a clear correlation between
03:50 20 concentrations in bare soil areas of yards with
21 speciated urinary arsenic levels."

22 Do you see that?

23 A Yes.

24 Q So I assume you thought the protocols of the
03:50 25 study were good enough to support that conclusion; is

1 that right?

2 A Yes.

3 Q Okay.

4 A But I think you were asking a different
03:50 5 question that I was attempting to answer.

6 Q Well, that was the question I was asking
7 now.

8 You then say, "Thus this study demonstrates
9 that soil can be a significant source of exposure to
03:50 10 arsenic."

11 And my question is, what do you mean by a
12 "significant source of exposure to arsenic"?

13 A What I'm referring to is in the risk
14 assessment, it would be a pathway that you would
03:51 15 include.

16 Q Okay. And it was included as a pathway,
17 correct?

18 A In the original CDM, it was, yes.

19 Q By "significant," you don't necessarily mean
03:51 20 it's a substantial exposure to arsenic in the sort of
21 absolute sense.

22 Is that fair to say?

23 MR. STALPES: Objection; vague.

24 THE WITNESS: What I'm referring to is from the
03:51 25 risk assessment perspective, that it should be

1 included in the risk assessment and then determined
2 whether or not it is a significant pathway or not.

3 BY MS. STEVENSON:

4 Q Okay. And how did you determine that
03:51 5 figure 3 showed a clear correlation between
6 concentrations in bare soil areas of yards and
7 speciated urinary arsenic levels?

8 A Well, it does -- figure 3 does provide a --
9 the algorithm for the best line through the data and
03:52 10 it provides an R value and it is not zero from what
11 the P value is saying.

12 Q And is the R value the correlation
13 coefficient?

14 A I would have to look back at the statistics,
03:52 15 but I don't know if it's exactly the correlation. It
16 depends on what they did, but it's -- it can be used
17 to derive it.

18 Q Do you know whether the study found any
19 correlation between urinary arsenic and arsenic in
03:52 20 soils, other than with respect to this bare soil
21 areas in the yards?

22 MR. STALPES: I'm sorry. Could you repeat the
23 question? I wasn't listening there.

24 (The record was read as follows:

25 "QUESTION: Do you know whether

1 the study found any correlation
2 between urinary arsenic and arsenic in
3 soils, other than with respect to this
4 bare soil areas in the yards?")

03:53 5 MR. STALPES: I'll object to the form. This is
6 just asking him for citations from the study. The
7 study says what it finds.

8 THE WITNESS: Again, I think the issue with this
9 particular study is that, as the authors point out,
03:53 10 that would rely -- that would heavily influence the
11 outcome of the interpretation of the data is -- are
12 issues of the protocol and the potential for changes
13 in bioavailability, which would have a direct impact
14 on any of these variables that were taken.

03:54 15 BY MS. STEVENSON:

16 Q Okay. How would bioavailability affect the
17 urine arsenic sampling that was done?

18 A If the material doesn't release from soil,
19 more or less it would influence the amount that would
03:54 20 come out of the urine potentially. It's one of the
21 factors. If the arsenic was located into some other
22 tissues for some other reason, that might influence
23 it as well. Those are two examples.

24 Q Well, if the material's not bioavailable
03:54 25 unless -- people aren't being exposed to it; is that

1 right?

2 A I think those are several questions -- those
3 are like several questions. The question is about
4 the study's design and the results and whether these
03:55 5 results are reliable for every indication that you
6 are raising. And the answer is the study protocol
7 doesn't necessarily provide the level of competence
8 that is being stated. So whatever the variables,
9 whatever the parameters are for, you know, individual
03:55 10 variables, they do impact the results of the study.

11 Q Have you look at Dr. Tsuji's rebuttal
12 report. Let's look at page 26. Dr. Tsuji says that
13 "Evidence from newer studies indicates that urinary
14 arsenic is considered the best biomarker of arsenic
03:56 15 exposure and is reflective of the daily dose,
16 particularly under steady state conditions."

17 Do you see that sentence?

18 A I'm sharing it at the moment. Can you
19 point --

03:57 20 Q It's right under section 3.4.1?

21 A Okay. Okay. I see the sentence.

22 Q Do you agree with that?

23 A I think it can be, if the study protocols
24 are done well, yes.

03:57 25 Q And would you agree that the University of

1 Cincinnati study was done under steady state
2 conditions?

3 A No.

4 Q Why not?

03:57 5 A Well, they took two consecutive days of
6 sampling.

7 Q And why is that not steady state?

8 A For a host of different reasons, but one of
9 them could be seasonal effects. In other words, an
03:57 10 example would be taking samples at different times of
11 the year for the same child, that would I think
12 provide a better example of steady state.

13 Q Would you agree with me that children were
14 studied in the University of Cincinnati study?

03:58 15 A Would I agree with that?

16 Q Yes.

17 A It's what it appears to be, yes.

18 Q And would you agree that children are the
19 most exposed to arsenic in soil?

03:58 20 A They certainly can be.

21 Q And would you agree with me that arsenic
22 exposure from soil would be highest during the summer
23 in Montana?

24 A Maybe.

03:58 25 Q You don't know one way or the other?

1 A I don't necessarily agree that it would be.

2 Q When do you think it would be the highest?

3 A I actually don't know enough to say whether
4 the springtime, the fall or the summer would be.

03:59 5 There are possibilities of winter with lack of snow,
6 that would be another arena as well.

7 Q Did you review any studies that -- actually,
8 let me have you look at page 28.

9 In the middle paragraph, about the second
03:59 10 half, Dr. Tsuji says "Dr. Pleus refers to seasonal
11 variation, implying that this produced uncertainty in
12 the results."

13 Is that what you were just describing to me,
14 the seasonal variation?

03:59 15 A That would be an example, yes.

16 Q She says, "The urinary arsenic data used to
17 represent exposure at the site were those measured in
18 summer when arsenic soil and dust exposure would be
19 highest."

04:00 20 Do you disagree with that?

21 A I think I'm disagreeing with that from what
22 I just answered to you.

23 Q And do you think that arsenic soil and dust
24 exposure would be higher at another time or you just
04:00 25 don't know if it's highest in the summer?

1 A I don't have any evidence that it's higher
2 in the summer versus spring versus fall versus
3 winter, and I've not seen any data that provides a
4 valuation of that.

04:00 5 Q The next sentence says, "The childhood
6 arsenic study reported a strong seasonal rhythm in
7 urinary arsenic level, its highest levels in July and
8 August and the lowest in January."

9 Do you see that?

04:00 10 A Uh-huh.

11 Q Do you disagree with that?

12 A Well, those are two time points.

13 Q Do you know how often the children were
14 sampled throughout that year?

04:00 15 A I don't recall. Let me look.

16 What was the question?

17 MR. STALPES: What was the question again?

18 (The record was read as follows:

19 "QUESTION: Do you know how often

04:02 20 the children were sampled throughout
21 that year?")

22 MR. STALPES: Which year? Sorry. Objection.

23 MS. STEVENSON: The year that the University of
24 Cincinnati study took place.

04:02 25 THE WITNESS: It doesn't specifically state that

1 a child was studied throughout the year.

2 BY MS. STEVENSON:

3 Q You are just looking at the Hwang study?

4 A I am looking at the Hwang study.

04:02 5 MR. STALPES: Is that not what you wanted him to
6 look at? Because I assumed you were quizzing him on
7 an aspect of the Hwang study.

8 MS. STEVENSON: There are multiple University of
9 Cincinnati studies that ended up published as the
04:02 10 Hwang study. I don't know if he's looked at them all
11 or not.

12 Q Have you looked at all of the University of
13 Cincinnati studies related to this project or just
14 the Hwang study?

04:03 15 MR. STALPES: If you are going to quiz him on
16 particular aspects --

17 MS. STEVENSON: I'm not quizzing him. I'm
18 asking him -- I'm trying to understand his opinion as
19 to whether he has data. He said this was only two
04:03 20 samples. I'm asking him if there were other samples.
21 If he doesn't know, he doesn't know. That's okay.

22 Q Do you know if there were other samples
23 taken during the University of Cincinnati study?

24 A I can't recall specifically what you are
04:03 25 asking, so I'm not really sure.

1 Q You just made the point that these were only
2 two samples levels in July and August and lowest in
3 January. And I'm asking whether you know whether
4 there were samples taken throughout the year?

04:03 5 MR. STALPES: I feel like you are quoting from
6 Tsuji's report and saying you opined this.

7 MS. STEVENSON: No. He just gave me -- I'm
8 quoting back to him what he just said.

9 MR. STALPES: Are you not reading from page 28
04:03 10 of Joyce Tsuji's report?

11 MS. STEVENSON: I did, and I asked him if he
12 agreed.

13 MR. STALPES: That's that what it says.

14 MS. STEVENSON: No, I asked him if he agreed
04:04 15 with that statement.

16 MR. STALPES: I'm lost here. I'm sorry. I
17 don't understand what's being asked or what's going
18 on.

19 THE WITNESS: Do you have a copy of the study
04:04 20 that is --

21 BY MS. STEVENSON:

22 Q Not that I want you to read right now.

23 You don't know? Is that your answer?

24 MR. STALPES: It's Exhibit 9. She gave you the
04:04 25 Hwang study. I'm so lost here.

1 BY MS. STEVENSON:

2 Q If you know whether or not the children in
3 the Bornschein study were sampled at two points
4 during the year or throughout the year.

04:04 5 Do you know or do you not know?

6 A What I can tell you is that I don't see it
7 stated in the Hwang study, so I don't know
8 specifically if this is one in the same or something
9 different.

04:04 10 Q Now, let's look at page 27 of Dr. Tsuji's
11 rebuttal report. Look at 3.4.2. Dr. Tsuji says that
12 you imply that the childhood biomonitoring study is
13 unreliable for accessing exposure because of
14 methodological issues; is that true? Do you agree
04:05 15 with her summary of your criticism?

16 A It depends on exactly what she is referring
17 to. Sometimes Dr. Tsuji is not particularly clear.

18 Q I think you raised earlier in this
19 deposition that you didn't think that the two
04:05 20 consecutive morning urinary void samples provided
21 reasonably accurate arsenic exposure levels; is that
22 true?

23 A What I'm saying is that if two consecutive
24 samples are taken on a, you know, day one and day
04:05 25 two, that that's not sufficient, given studies where

1 I've been involved in detecting urinary metabolites
2 to get an accurate picture of what is going on. Two
3 consecutive days of spot urines or first void urines
4 is not sufficient.

04:06 5 Q Is there a difference between first void
6 urines and spot urines taken later in the day in
7 terms of their reliability?

8 A There can be, but again that's really based
9 on, you know, an individual pattern. You know, the
04:06 10 best of all is to collect a 24-hour urine, for
11 example.

12 Q And there were study subjects in the
13 University of Cincinnati study for whom that was
14 done; Isn't that right?

04:06 15 A There may have been. Not these data that
16 are being relied upon.

17 Q Are you aware how many subjects were --
18 had 24-hour urine samples collected from them?

19 A I don't recall.

04:06 20 Q And do you recall whether that showed --
21 indicated that the first morning voids were
22 inaccurate or accurate?

23 A I don't recall those data at the moment.

24 Q At the bottom of that paragraph, she says,
04:07 25 that "Hwang also reported that the two first-morning

1 void samples were highly correlated for individuals."
2 Do you see that?
3 A Yes.
4 Q Okay. Do you agree that that's true?
04:07 5 MR. STALPES: Objection; vague. Correlated to
6 what?
7 MS. STEVENSON: To each other.
8 THE WITNESS: Do you have a copy of that study?
9 BY MS. STEVENSON:
04:07 10 Q I already gave it to you.
11 A I don't think so.
12 Q Hwang. Oh, 1997 B.
13 A It's B.
14 Q Yeah, I don't want you to read that right
04:08 15 now.
16 You don't know off the top of your head?
17 A I'm not familiar with that study to make a
18 recollection as I sit here at the moment.
19 Q Okay.
04:08 20 A But I would like to see it.
21 Q I'll give it to you when we leave today.
22 A No, to answer your question.
23 Q I think the answer is you don't know right
24 now, which is a fine answer.
04:08 25 A Okay.

1 Q Have you look at the bottom of page 28.
2 The last paragraph there, Dr. Tsuji says that,
3 according to you, "Another source of uncertainty that
4 limits EPA's comparison of its risk assessment with
04:08 5 the biomonitoring data is the lack of full speciation
6 of arsenic in water, soil and dust."

7 Do you see that?

8 A Uh-huh.

9 Q And is that a criticism you made in your
04:09 10 opening report?

11 A Uh-huh, yes.

12 Q On the next page, Dr. Tsuji responds to that
13 and says that in the -- I'm looking in the middle of
14 the second paragraph, "Unlike for urine, these
04:09 15 arsenic forms and other organic forms are not
16 speciated in soil, dust and water because arsenic
17 forms in these media, soil, dust and water, are known
18 to be largely inorganic."

19 Do you see that?

04:09 20 A I see where you are reading, yes.

21 Q Do you agree with her statement that arsenic
22 forms in soil, dust and water are known to be largely
23 inorganic?

24 A I'm reading the sentence and I'm trying to
04:09 25 listen to your question and I'm not sure I followed

1 either one yet.

2 Q Do you agree with Dr. Tsuji that arsenic
3 forms in soil, dust and water are known to be largely
4 inorganic?

04:10 5 A They can be, yes.

6 Q And so does that alleviate your concern that
7 you raised about the fact that there wasn't
8 speciation of the arsenic in soil, dust and water?

9 A No.

04:10 10 Q Why not?

11 A Because I think these are questions that go
12 to the heart of the calculations and the assessment
13 of potential exposure. And the information on the
14 analysis, at least as I read it, had certain
04:10 15 questions that were -- remained unanswered as to the
16 quality and the ability of those analytes to conduct
17 such a study, other than just making an assumption
18 based on the literature.

19 Q Have you look down at the last paragraph on
04:10 20 that page, the first sentence, Dr. Tsuji notes that
21 "The standard practice for environmental sampling of
22 arsenic in soil, dust and water is to measure the
23 total arsenic concentration rather than to speciate
24 the samples for various organic arsenic forms because
04:11 25 the forms of arsenic present in these media are

1 overwhelmingly inorganic," and she then cites ATSDR.

2 A Uh-huh.

3 Q Do you see that?

4 A Uh-huh.

04:11 5 Q Do you agree with that or disagree?

6 A It certainly can be that the standard
7 practice is measuring total arsenic. I mean, I think
8 that's a pretty straightforward point. However, that
9 doesn't necessarily mean that that is the best

04:11 10 approach to conducting a study. Just because it's
11 done that way doesn't mean that there isn't a better
12 way to make that determination.

13 Q Okay. Would you agree that assuming that
14 all of the arsenic was inorganic rather than
04:12 15 speciating it, if anything would result in an
16 overestimate of the arsenic exposure in this study?

17 A It's a good question. It's possible. The
18 somewhat difficulty is that inorganic arsenic then
19 gets metabolized to organic arsenic in the body and
04:12 20 so kind of the separation of bodily burden versus
21 source could contribute to that.

22 Q You are saying that inorganic arsenic turns
23 into organic arsenic in the body?

24 A It can.

04:12 25 Q Under what circumstances?

1 A DMA, dimethylarsenic.

2 Q And that DMA is measured in urinary arsenic?

3 A Yes.

4 Q So that could be accounted for, correct?

04:13 5 A Yes. Potentially. But I think the heart of

6 the question is going back towards other sources of

7 arsenic, not just inorganic.

8 Q Okay. Let's talk about that for a minute.

9 MR. STALPES: Do you mind if we take five here,

04:13 10 about an hour.

11 MS. STEVENSON: Where are we on tape?

12 THE VIDEOGRAPHER: We are about an hour and 18

13 minutes.

14 MS. STEVENSON: Okay. We can take a quick

04:13 15 break.

16 THE VIDEOGRAPHER: Going off the record. The

17 time now is approximately 4:14 p.m.

18 (Off the record.)

19 THE VIDEOGRAPHER: Going back on the record.

04:25 20 The time now is approximately 4:26 p.m. This is the

21 beginning of disk number 4 in the deposition of

22 Richard Pleus.

23 BY MS. STEVENSON:

24 Q Dr. Pleus, do you know of any data that

04:26 25 contradicts the Hwang data with respect to exposure

1 to arsenic in soil in the Anaconda smelter Superfund
2 area?

3 A Oh, in the Anaconda? Not that I recall.

4 Q Would you agree with me that all people are
04:26 5 exposed to inorganic arsenic through their diet?

6 A Yes.

7 Q And would you agree that the level of
8 inorganic arsenic that people are exposed to through
9 their diet is substantially larger than people would
04:26 10 be exposed to through soil at a smelter site?

11 MR. STALPES: Objection; speculation and vague.

12 THE WITNESS: No, I don't agree with that.

13 BY MS. STEVENSON:

14 Q Are you aware of smelter sites where people
04:27 15 have been shown to have had more exposure from soil
16 than through their diet?

17 A I think the Hwang study is a study that
18 moves towards that.

19 Q The Hwang study doesn't consider inorganic
04:27 20 arsenic from the diet at all, does it?

21 A Not specifically, but it addresses the
22 question of other levels of urinary arsenic from
23 other locations, that I recall.

24 Q Okay. But it assumes that all inorganic
04:27 25 arsenic in the urine is from exposure to soil and

1 dust, not from diet.

2 Is that fair to say?

3 A In this particular study, the Hwang is what
4 you are saying?

04:28 5 Q Yes.

6 A I think they mention that they understand
7 that, but they did not, to my recollection, address
8 that specifically.

9 Q And would you agree with me that at least
04:28 10 some of the speciated arsenic that was reflected in
11 the urine of the subjects of the Hwang study came
12 from their diet?

13 A I certainly suspect that some of it, but
14 it's hard to say how much.

04:28 15 Q Talk to you about the pathways that you
16 include in your risk assessment, so if you can get
17 your report. Looking at page 41 --

18 A Got it.

19 Q -- these are all of the different pathways
04:29 20 that you include in your risk assessment here at
21 table 8; is that correct?

22 A Yes.

23 Q Now, some of these are not soil related. Is
24 that fair to say? Like ingestion of surface or
04:29 25 groundwater?

1 A I'm sorry. Repeat your question. They are
2 not soil related, is what you are saying?

3 Q Right.

4 A And you said as an example, ingestion of
04:30 5 surface or groundwater?

6 Q Yes.

7 A That, I don't know.

8 Q I mean, if you were ingested --

9 For example, if you cleaned up soil on your
04:30 10 property, would that reduce your exposure to arsenic
11 through ingestion of surface water?

12 A It could. Doesn't have to, but it could,
13 yes. Depends on the source, the size. Is it a pond,
14 is it a river, things along that line.

04:30 15 Q When you were looking at this pathway, were
16 you looking specifically at ingestion of surface or
17 groundwater on plaintiffs' properties?

18 A On the plaintiffs' properties, I think it
19 was data that was found in the studies. Hold on. I
04:31 20 think on page 37 I describe the source of
21 information.

22 Q Going back to page 41, do you agree with
23 me that you have three pathways here that make up
24 88 percent of the total risk, and that would be
04:31 25 ingestion of soil, ingestion of dust and ingestion of

1 produce?

2 A Those are definitely the three highest
3 pathways, yes.

4 Q All right. And you attribute 38.4 percent
04:31 5 of the total risk to ingestion of homegrown produce;
6 is that right?

7 A Yes. Although I make -- I'm very clear
8 about the amount and assumptions and things like
9 that.

04:32 10 Q Let's talk about some of those.

11 When you calculated your risk related to
12 homegrown produce --

13 Did you do any surveys or anything to find
14 out whether people in Opportunity grow vegetables in
04:32 15 their yard?

16 A Did I do a survey?

17 Q Yes.

18 A Did Intertox or did we send out a
19 questionnaire?

04:32 20 Q Yes.

21 A The answer's no.

22 Q Do you have any specific information on
23 whether people in Opportunity actually grow
24 vegetables on their properties?

04:32 25 A Yes.

1 Q What is that information?

2 A It's information provided by the attorneys
3 in this case, and also the HHRA talks about it as
4 well.

04:32 5 Q And to the extent people are growing
6 produce, plaintiffs are growing produce on their
7 properties, do you know whether they are growing it
8 in soil that would have been impacted by the smelter
9 or soil that they imported specifically for gardening
04:33 10 purposes?

11 A Again, the HHRA is to make an estimate of
12 the reasonable maximal exposure of what the cancer
13 risk could be assuming these pathways. And so based
14 on that, that information, was there a pathway, the
04:33 15 answer is yes. Was there information that provided
16 simply whether there are vegetables and produce that
17 are grown, the answer is yes. And so that was the
18 data that we used or I used.

19 Q And so did you assume, then, that produce
04:33 20 was being grown in soils that were impacted by
21 smelter emissions or had elevated arsenic levels?

22 A Yes.

23 Q And I think your assumption is that
24 25 percent of a person's vegetable intake for the
04:34 25 year would be from homegrown vegetables; is that

1 correct?

2 A I believe that's correct.

3 Q And you would agree with me that even
4 store-bought vegetables have inorganic arsenic in
04:34 5 them.

6 Is that fair to say?

7 A I think it depends on what it is, but in
8 general, they would. I would expect them to have
9 some potentially.

04:34 10 Q And so when you looked at this 25 percent of
11 homegrown vegetables, did you deduct the 25 percent
12 of vegetables that that would replace -- of
13 store-bought vegetables that that would replace or
14 did you consider a person's full exposure to
04:34 15 store-bought vegetables and then an additional
16 25 percent of homegrown vegetables?

17 A Just made the assumption of the 25 percent
18 of this, of grown in the crops -- in the area.

19 Q But did you consider that that consumption
04:35 20 would be on top of a person's regular store-bought
21 vegetable exposure to inorganic arsenic?

22 A I would have to think about that. The HHRA
23 doesn't necessarily account -- ask for an accounting
24 of that difference and may already incorporate that
04:35 25 assumption in it. I don't recall right now.

1 Q You would agree with me that if a person was
2 eating 25 percent of their consumption of vegetables
3 from their garden, they would be eating 25 percent
4 less store-bought vegetables.

04:35 5 Is that a fair assumption?

6 A Possibly.

7 Q Are you aware of any other Superfund sites
8 where ingestion of produce, homegrown produce, has
9 been considered to be a significant pathway in a
04:36 10 human health risk assessment?

11 A Nothing I can recall right now. But I think
12 the approach that I took was one where, you know,
13 25 percent is really quite a minimal amount compared
14 to other risk assessments that we have done, so we
04:36 15 try to be fairly reasonable, given the climate and
16 the location. And as I said before, the HHRA
17 actually states that produce is grown by people that
18 live in the area.

19 Q The CDM's HHRA?

04:36 20 A Yes.

21 Q Okay. But it concluded that there was
22 actually very little homegrown produce grown in the
23 area, correct?

24 A I don't recall that being said that way.

04:36 25 Q Okay.

1 A And frankly, they never explained why they
2 could -- why they just basically ignored it.

3 Q Do you think that 25 percent of veg- --
4 homegrown vegetables is a reasonable estimate for
04:37 5 people in Opportunity?

6 A Based on our experience, again, and the
7 reasonably maximum individual, whether it's today,
8 present day, current or future, I think that's part
9 of the guidance that we're asked to look at. I think
04:37 10 it's reasonable to consider that that would be the
11 case.

12 Q Let me ask you, when you are talking about
13 the future, you are saying that in the future people
14 may want to grow vegetables on the property even if
04:38 15 they don't now.

16 Is that your understanding?

17 A Yeah. I mean, whether it's new people or
18 people that come in, that's a potential future use of
19 the land.

04:38 20 Q And you talk about that in your report?

21 A Are you looking for something that says
22 about future use?

23 Q Yes.

24 A Actually, in your soil screening guidance,
04:39 25 Exhibit 7, page 1.

1 Q I'm looking for something that you
2 specifically said about future use. Just one second.

3 Let me have you look at the top of page 28.

4 A Of my report?

04:40 5 Q Yes. Says there that you note, "In the
6 baseline HHRA, the pathway of ingestion of produce
7 was not evaluated in part because Anaconda resident
8 survey responses indicate consumption of locally
9 grown fruits and vegetables is minimal."

04:40 10 Do you see that?

11 A Yes, I can read that as well.

12 Q And do you disagree with that?

13 MR. STALPES: I'm not sure. Does he disagree
14 that it says that?

04:40 15 MS. STEVENSON: No. Does he disagree that
16 Anaconda resident survey responses indicate
17 consumption of locally grown fruits and vegetables.

18 MR. STALPES: The survey responses that they
19 have?

04:40 20 Objection; vague. Go ahead.

21 THE WITNESS: Well, the sentence is what it is.
22 But it provides no assessment of in defining what's
23 minimal, what the survey results were, provides no
24 information for which would be expected to cross that
04:41 25 pathway off. And therefore I did it.

1 BY MS. STEVENSON:

2 Q You did what?

3 A I included that in the HHRA.

4 Q Okay. So you don't -- you just don't know
04:41 5 whether that -- whether it's accurate or not that
6 Anaconda residents have minimal consumption of
7 locally grown fruits and vegetables?

8 A I think there's several components to that.
9 Anaconda and Opportunity may be a difference, number
04:41 10 1. Number 2, at least the results that I had seen
11 from the information provided by attorneys provided a
12 pathway, just as that still provides a pathway of
13 exposure. So those are -- the question is whether a
14 pathway exists or not; and if it does, then it needs
04:42 15 to be assessed.

16 (Deposition Exhibit 12 was
17 marked for identification and is
18 attached hereto.)

19 BY MS. STEVENSON:

04:42 20 Q Is this the information that you relied on
21 in determining that there was a pathway with exposure
22 through homegrown produce?

23 A Yes. This and the HHRA.

24 Q And this is all of the information that you
04:42 25 had about that topic, this chart, Exhibit 12, and the

1 HHRA?

2 A It's really quite simple. Is there a
3 pathway or not. And this provides evidence, as well
4 as the HHRA provides evidence.

04:43 5 Q Of the 100 or so plaintiffs in this case,
6 how many reported that they currently have a
7 vegetable garden?

8 A I don't know. The question is they have
9 them.

04:43 10 Q Is it -- is the impact or the exposure to
11 arsenic through vegetables, does it vary from
12 vegetable to vegetable?

13 A Yes, it can.

14 Q Did you consider that in your HHRA that you
04:43 15 conducted?

16 A I think it's pretty well spelled out how it
17 was approached.

18 Do you want me to read it?

19 Q No. Let me have you look at page 30 and
04:43 20 page 35.

21 A 30 or 35?

22 Q Let's look at both, if you would. It's a
23 little bit tricky.

24 On page 30, it looks like you're reporting a
04:44 25 value for above-ground protected produce at .006.

1 Do you see that?

2 A Milligrams per kilogram dry weight.

3 Q Yes.

4 A I see that value.

04:44 5 Q And a value for below-ground produce at
6 .0036.

7 Do you see that?

8 A Yes.

9 Q And then on page 35, it looks like you
04:44 10 reversed those.

11 And I'm just asking if you know which one
12 you used in your calculations?

13 A I would have to go back and double-check the
14 data sheets to double-check on that.

04:45 15 Q Do you know which one of those is correct?

16 A Not at the moment. Whether -- you mean
17 correct? What do you mean?

18 Q Which one was accurate? Which one were you
19 intending to use?

04:45 20 A I'm not sure at this moment.

21 Q If you wanted to mitigate exposure through
22 the homegrown produce pathway, could you import soil,
23 unimpacted soil for your garden?

24 A Would that be a way to as opposed to growing
04:46 25 it in ground that's contaminated?

1 Q Yes.

2 A That would be one potential way to reduce
3 it. It doesn't decrease all components, but it
4 does -- it could decrease the amount taken up by
04:46 5 roots, for example.

6 Q Okay. Why would it not decrease all -- what
7 do you mean by "all components"?

8 A Well, there could be some surface dust that
9 lands on the plant that comes from other sources as
04:46 10 well.

11 Q Okay. But it would eliminate arsenic that
12 was being taken up into the plant via its roots which
13 were in the ground?

14 A It would have an effect on that, that's
04:46 15 correct. How much, I'm not quite sure, but it would
16 have -- depends on what soil, you know, levels,
17 depth, what are the soils surrounding the plot,
18 things like that that would also need to be
19 considered.

04:46 20 Q Would you agree with me that as soil arsenic
21 concentration increases, the level of increase in
22 arsenic that's taken up by plants is relatively much
23 smaller?

24 A What do you mean by "relatively much
04:47 25 smaller"?

1 Q Sure.

2 If you doubled your soil arsenic
3 concentration, is it fair to say that the amount of
4 arsenic taken up by a vegetable in that soil would
04:47 5 not double?

6 A I think it depends on the crop but there are
7 cases where that's true.

8 Q What case is that true?

9 A I can't think of it, but it sounds -- it
04:47 10 sounds that that is the case.

11 Q For the most part, would you agree that the
12 uptake would be -- would increase at a much lower
13 rate than the increase in soil arsenic concentration?

14 A I'm not sure I understand your question.

04:47 15 Q Sure.

16 Would you agree with me that for most
17 vegetables and most typical circumstances, the rate
18 of increase in arsenic being taken up by the plant
19 would be much lower than the rate of increase in
04:48 20 arsenic in soil concentration?

21 A I think it depends on the range of arsenic
22 in soil concentration. I don't think it's -- I think
23 there are different ranges that -- where that would
24 be true and different ranges that wouldn't be true.

04:48 25 Q What studies are there that show that

1 uptake of arsenic in vegetables is significant?

2 A I think, again, I have provided pretty
3 detailed analysis of that on page 35, page 34,
4 page 33.

04:49 5 Q And the studies that I have seen that you
6 cite there are the Ramirez-Andreotta study; is that
7 right?

8 A Those are some of them.

9 Q Was the Ramirez-Andreotta study, what kind
04:49 10 of soil were those plants grown in?

11 A Can you point to where you're speaking?

12 Q I'm looking at page 34.

13 A 34. So can you repeat your question,
14 please?

04:50 15 Q Sure.

16 What type of soils were the vegetables being
17 grown in in that study?

18 A I'm not quite sure I recall exactly if that
19 can be determined from that sentence. Maybe I can.

04:51 20 Q Let me ask you this. Have you cited all
21 of the studies that you know of that relate to uptake
22 of arsenic and vegetables in your report here at
23 pages 33 to 35?

24 A So back to your former question, it says
04:51 25 vegetables grown in mining-affected soils. I don't

1 know if I have -- if I included all of the
2 literature. I included what I considered was the
3 best science for the circumstances of this HHRA.

4 Q And are you aware of any --

04:51 5 Are you aware of any data to suggest that
6 people in Opportunity eat meat that has been raised
7 on their own properties?

8 A Am I aware of any data?

9 Q Yes.

04:52 10 A I think again I would point to both the
11 information that's provided in Exhibit 12 as well as
12 the HHRA.

13 Q Are you aware of anything else?

14 A I think that's sufficient.

04:52 15 Q Have you ever personally done a study of
16 uptake of arsenic in vegetables?

17 A I have not.

18 Q Let me have you look at page 42 of your
19 report. That's not correct. Page 45, I'm sorry.
04:53 20 This is a chart that you provide reflecting arsenic
21 action levels at various different sites.

22 Is that fair to say?

23 A Yes.

24 Q Do you know at which of these sites arsenic
04:53 25 was the driver of the clean-up level?

1 A I can't recall specifically which one was,
2 quote, the driver, but certainly a number of them.
3 Arsenic was a significant contributor.

4 Q Would that be an important fact to consider
04:54 5 in assessing the relevance of the arsenic action
6 level that was selected?

7 A Not necessarily.

8 Q Why not?

9 A Let me make sure I understand your question.
04:54 10 Are you saying that would these other assessments --
11 knowing that it was a driver in these other
12 assessments, would that affect my interpretation of
13 the 250 parts per million in this particular case?

14 Is that what you are asking?

04:55 15 Q No. I'm just saying if you are comparing
16 different sites, wouldn't it make the most sense to
17 compare sites where arsenic was actually the driver
18 of the cleanup if you are comparing action levels
19 among sites?

04:55 20 A Possibly. It's not a yes or no, depends on
21 the site.

22 Q Sites where arsenic is the driver of the
23 cleanup, it would typically be based on more site
24 specific or data specific to arsenic?

04:55 25 MR. STALPES: Objection; speculation,

1 foundation.

2 THE WITNESS: I'm sorry, I don't understand.

3 BY MS. STEVENSON:

4 Q At sites where arsenic is the driver of the
04:55 5 cleanup, is it more likely that site specific data
6 has been acquired about arsenic?

7 MR. STALPES: Same objections.

8 THE WITNESS: I don't know.

9 BY MS. STEVENSON:

04:55 10 Q Are you giving any opinions about exposure
11 to -- plaintiffs' exposure to arsenic in drinking
12 water in this case?

13 A To the degree that I've included it in the
14 HHRA, like surface water, that's what I've included,
04:56 15 that's where I'm basing my assessment.

16 Q Are you giving any opinion that plaintiffs
17 are subject to any health risk from their drinking
18 water?

19 A I think -- let's see if it's -- I have
04:56 20 ingestion at surface or groundwater as a line item,
21 and it's based on that I have it at very low percent
22 of total risk. It's less than 1 percent. So I did
23 make an assessment, but it's a pathway that has a
24 very low percentage.

04:57 25 Q Are you aware that --

1 What is ATSDR?

2 A It is a part of the federal agencies of the
3 Centers for Disease Control. It is an organization
4 that will conduct -- it will do a number of things.
04:57 5 It produces toxicological profiles. And if there is
6 a request for a health survey, it will consider that,
7 things like on that line.

8 Q What is its mission overall, if you know?

9 A I don't know -- I can't -- I'm trying to
04:57 10 imagine the website and I don't remember what it says
11 as its mission.

12 Q Is it a public health agency?

13 A Yes.

14 Q And are you aware that ATSDR reviewed the
04:58 15 remedy in place, the residential soils remedy in
16 place for the Anaconda smelter Superfund site in
17 2007?

18 A I recall a reference to that, yes.

19 Q Did you review that, their report?

04:58 20 A It's been a while. I don't remember the
21 specifics of it, but I do recall that I read it.

22 Q Did you note that ATSDR raised or addressed
23 many of the criticisms that you have raised regarding
24 the Baseline Human Health Risk Assessment?

04:58 25 MR. STALPES: Objection; broad.

1 THE WITNESS: Well, it's not their function to
2 do an HHRA. That's not what they do and they didn't
3 in this case. The question is on EPA's perspective,
4 was this risk assessment done according to guidelines
04:59 5 and, as a result of that, was there an excess cancer
6 risk or an unacceptable cancer risk to those
7 individuals based on the analysis.

8 BY MS. STEVENSON:

9 Q Okay.

04:59 10 A So it's almost an apples and oranges
11 comparison.

12 Q Well, ATSDR would be interested and
13 concerned if there were any excess cancer risk
14 to people at the Anaconda smelter Superfund site,
04:59 15 would it not?

16 MR. STALPES: Objection; foundation,
17 speculation, argumentative and asked and answered.

18 THE WITNESS: I don't know. I'm assuming they
19 would be interested, but I know they have plenty of
04:59 20 other things that they are looking at as well.

21 BY MS. STEVENSON:

22 Q But they are motivated to protect the public
23 health, correct?

24 MR. STALPES: Objection; foundation,
04:59 25 argumentative.

1 THE WITNESS: I think to the degree that they
2 understand what the situation is and the issues at
3 hand, I would assume that they are, but I don't know.
4 It's not clear to me that the risk assessment
05:00 5 that's -- I know it's not clear that the risk
6 assessment that was conducted, the HHRA, was done in
7 a manner consistent with health effects with EPA.

8 MS. STEVENSON: I'm sorry, can you read me that
9 answer?

05:00 10 (The record was read as follows:

11 "THE WITNESS: I think to the
12 degree that they understand what the
13 situation is and the issues at hand, I
14 would assume that they are, but I
15 don't know. It's not clear to me that
16 the risk assessment that's -- I know
17 it's not clear that the risk
18 assessment that was conducted, the
19 HHRA, was done in a manner consistent
05:00 20 with health effects with EPA.")

21 THE WITNESS: The word "health effects" was an
22 inadvertent addition. I meant the guidance of EPA.
23 BY MS. STEVENSON:

24 Q Besides you, do you know of any state or
05:01 25 federal or local agency that has concluded that the

1 250 part per million action level is inconsistent
2 with EPA guidelines?

3 A I don't know who's been asked that question.

4 Q Is there anybody that you are aware of who's
05:01 5 come to that conclusion?

6 A I think there's some memos that raise those
7 questions, but I don't know for a fact. But I don't
8 know if anybody's ever asked that question.

9 (Deposition Exhibit 13 was
05:02 10 marked for identification and is
11 attached hereto.)

12 BY MS. STEVENSON:

13 Q Dr. Pleus, Exhibit 13 is a separate opinion
14 that you've given in this matter regarding historical
05:02 15 industry and Anaconda smelter operators' knowledge of
16 adverse human health and environmental effects of
17 arsenic and lead.

18 Do you see that?

19 A I do.

05:02 20 Q How did you prepare this report?

21 A Can you be more specific?

22 Q Sure.

23 What did you do to get the information to
24 prepare this report?

05:03 25 A Conducted a literature search.

1 Q And so you reviewed articles?

2 A Yes. They are referenced in the document.

3 Q And I think that you said you at least
4 reviewed Quivik's report, did I hear you say?

05:03 5 A Yes. And I make reference to it here.

6 Q Do you have any qualifications as a
7 historian?

8 A As a historian?

9 Q Yes.

05:03 10 A Can you be more specific?

11 Q Yes.

12 Have you ever had any education or training
13 to do the work of a historian?

14 A And what do you define as the work of a
05:03 15 historian?

16 Q A person who studies history and writes
17 about it.

18 A Yes.

19 Q What?

05:03 20 A I would say the -- all of the work that I've
21 done in my Master's, my PhD, my post doc, my -- the
22 work that I have done as a professional, all
23 including this report, all includes understanding
24 historical situations, what happened at what time,
05:04 25 what did we know at one time and reporting that.

1 I've done that hundreds of times.

2 Q Is there any specific class you can tell me
3 that you took in your -- after your undergraduate
4 work related to historical analysis?

05:04 5 A Historical analysis? As it relates to
6 toxicology, I just mentioned that, all of those.

7 Q Every class you took related to the study of
8 history?

9 MR. STALPES: Objection; argumentative.

05:04 10 THE WITNESS: I'm not quite sure I understand
11 your question.

12 BY MS. STEVENSON:

13 Q Is there any specific class you can tell me
14 that you took in your PhD training that related to
05:05 15 historical analysis?

16 A I cannot think of a course that I took in my
17 PhD that was specifically historical that was -- that
18 had the word "history" in it in some way.

19 That, though, is not the way that PhDs and
05:05 20 grad students are trained. They use history on a
21 daily basis in terms of understanding the outcomes.

22 Q How did you determine what --

23 You said you did a literature search; is
24 that right?

05:05 25 A Correct.

1 Q And that had -- were those published
2 articles that you were searching for?

3 A Well, they -- I think for the most part,
4 they are all published of some sort, whether they
05:06 5 be articles that are in a legal record or in some
6 administrative hearing or they may have been peer
7 reviewed or published in some other way, those are
8 types of studies that were a part of what I looked
9 at here.

05:06 10 Q Did you review any primary source documents?

11 A Meaning?

12 Q Documents of the Anaconda Company?
13 Documents from the Bliss lawsuit?

14 A I believe so.

05:06 15 Q Which documents did you review?

16 A Well, again, I think I referenced them in my
17 report. Is there something that I'm --

18 Is there a specific question that you have?

19 Q How did you obtain those documents?

05:07 20 A How did I obtain these documents?

21 Q The primary source documents that you said
22 you reviewed.

23 A Well, I'm assuming that they basically are
24 referenced on page 11, 12, 13 and 14, and those were
05:07 25 either obtained through libraries, possibly archived

1 at certain agencies, some of them may have been
2 provided during my professional career. I can't
3 recall all of the possible ways that I could have
4 gotten these documents.

05:07 5 Q Did you yourself go to libraries and find
6 these documents?

7 A I had my librarian do that.

8 Q And what did you tell her to look for?

9 A Documents that would provide an
05:08 10 understanding of what was known at what time relative
11 to emissions from smelters at that point on both
12 human health and ecological receptors.

13 Q And I think you give the opinion in your
14 conclusions on page 10 that "The industry and
05:08 15 Anaconda smelter officials knew that mining and
16 smelting facilities, including the Anaconda smelter,
17 represented a source of arsenic and lead emissions."

18 Do you see that?

19 A I do.

05:08 20 Q Would it be fair to say that, for instance,
21 federal government officials knew that, too?

22 A It's possible. You know, EPA at the time
23 was never developed, so I can't really recall what
24 type of agency would have known it at the same time.

05:09 25 Q Do you recall that the federal government

1 sued the Anaconda Company in the 19 teens over
2 emission from -- emissions from the smelter?

3 A Yeah, I do recall that.

4 Q And they established a smoke commission to
05:09 5 govern the operation of the smelter?

6 A Yeah, I recall that.

7 Q So would that suggest that they did have the
8 same knowledge as Anaconda Company about the fact
9 that the smelter was a source of arsenic and lead
05:09 10 emissions?

11 MR. STALPES: Objection; speculation.

12 THE WITNESS: I don't know the answer to that
13 question, who knew what at what time first.

14 BY MS. STEVENSON:

05:09 15 Q Okay.

16 (Deposition Exhibit 14 was
17 marked for identification and is
18 attached hereto.)

19 BY MS. STEVENSON:

05:10 20 Q This is the third amended complaint that's
21 been filed in this case. Maybe look at paragraph 14.
22 This paragraph says "Defendants intentionally,
23 negatively, maliciously and/or with reckless
24 disregard of plaintiffs' rights made affirmative
05:10 25 representations and/or failed to disclose material

1 facts to plaintiffs and/or prior owners of
2 plaintiffs' property. Defendants were aware of the
3 toxicity and migration of said hazardous materials,
4 knew the hazards associated with the migration of
05:10 5 such toxic materials into the community and failed
6 to warn plaintiffs or prior owners of plaintiffs'
7 property that their health, welfare and property
8 values had been jeopardized."

9 Do you have any facts that support those
05:11 10 allegations in this complaint?

11 MR. STALPES: I'm going to object as broad.

12 Go ahead.

13 THE WITNESS: Well, I'm not an attorney, so I'm
14 not familiar with writing these kinds of documents
05:11 15 and I don't -- so I don't have an appreciation for
16 style and understanding of what this is, nor do I
17 have the insight of the author of this, what was
18 intended at the -- by this particular statement. So
19 there's a lot I don't know about what this
05:11 20 represents.

21 Could you be a little more specific?

22 BY MS. STEVENSON:

23 Q Sure.

24 Are you going to get up at trial and testify
05:12 25 about any misrepresentations that Anaconda or the

1 Atlantic Richfield Company made to any plaintiff or
2 prior owner of plaintiffs' property in this case?

3 MR. STALPES: I'm just going to object. The
4 report speaks for itself. All of the opinions are
05:12 5 disclosed within the report. He's not the author of
6 this document, as he mentioned, the complaint.

7 Go ahead.

8 THE WITNESS: I don't know how to answer the
9 question based on how this is written. I don't know
05:12 10 how to answer the question.

11 BY MS. STEVENSON:

12 Q I didn't see any allegations in your report
13 about misrepresentations made by Atlantic Richfield
14 or Anaconda, excuse me, to the community.

05:12 15 Do you intend to testify about any such
16 misrepresentations?

17 A Can you define what you mean by
18 "misrepresentations"?

19 Q A lie, something that's not true.

05:12 20 A I don't have enough of a grasp of this case
21 to be able to answer that particular question. The
22 word "misrepresentation," I'm glad you defined it for
23 me. A lie would not have been my first understanding
24 of that term. My understanding of a
05:13 25 misrepresentation could be a lie, but it could also

1 be something that says here's what we knew or didn't
2 know and we didn't present that information.

3 Q Okay. So do you intend to testify that
4 there were times where Anaconda Company or Atlantic
05:13 5 Richfield Company withheld information from the
6 public that resulted in the public having a
7 misunderstanding about something?

8 A Well, I think my -- if you go back to my
9 report on this case --

05:15 10 I don't know how to answer your question.

11 Q You said that you've given a deposition,
12 I think, 40 times approximately in your career?

13 A Yes.

14 Q And have you been retained as an expert --
05:15 15 I assume in all of those cases you were retained as
16 an expert witness; is that accurate?

17 A Yes.

18 Q Are there times where you have been retained
19 as an expert witness in cases in which you did not
05:15 20 give a deposition?

21 A Yes.

22 Q How many in addition to the 40?

23 A No, that would -- I'm kind of thinking that
24 that might include some of the 40 as well.

05:15 25 Q Have you ever been the subject --

1 Has your expert opinion ever been the
2 subject of a motion to strike the opinion?

3 A Can you tell me how that might look, for
4 example?

05:15 5 Q Sure.

6 Has anybody ever filed a motion in a case
7 that said you should not be allowed to give part of
8 your expert opinion?

9 A Yes, I believe so.

05:16 10 Q And in what cases has that happened?

11 A Seems to be occurring more frequently as a
12 common procedure. I can't recall exactly what it is,
13 but in every case it's not been successful.

14 Q Okay. So you have never been excluded by a
05:16 15 court as an expert?

16 A No.

17 MS. STEVENSON: One second.

18 (Deposition Exhibit 15 was
19 marked for identification and is
05:17 20 attached hereto.)

21 BY MS. STEVENSON:

22 Q Handing you what's been marked Exhibit 15.
23 Did you assist in the preparation of that
24 document?

05:17 25 A Assist in the preparation of this document?

1 Q Yes.

2 A No.

3 Q Have you seen it before?

4 A The numbers are familiar, but the actual
05:17 5 page is not to me.

6 Q Do those numbers --

7 Do you just recognize them as a summary of
8 some of the Kane sampling data?

9 A That's what I would have said, yes. I'm not
05:17 10 positive that's the case, but that's --

11 Q Have you ever given any expert testimony in
12 a case about arsenic?

13 A I believe, yes.

14 Q What case?

05:19 15 A I would have to go back, but we talked about
16 the cases in --

17 So let me make sure I understand. Testimony
18 on arsenic, meaning that it was part of an evaluation
19 in a case or a risk assessment or something like
05:19 20 that?

21 Q In a litigation.

22 A In litigation?

23 Q Yes.

24 A Yes, although I don't recall exactly what,
05:19 25 but I believe the Omaha case that we talked about

1 earlier. Clearly the Everett case, arsenic was
2 a component in that case as well. I think there are
3 others, but I can't recall. But it would be -- on
4 the others, it would be another component of a number
05:20 5 of constituents as well, as I recall.

6 Q Do you know the remedy that the plaintiffs
7 are seeking in this case? I'm sorry if I already
8 asked you this.

9 A Can you be more specific?

05:20 10 Q Do you know what plaintiffs are seeking to
11 get from this case?

12 A Not exactly.

13 Q What is your general understanding? You
14 don't need to read the complaint. I'm just asking
05:21 15 what you know.

16 A Again, I don't really -- sometimes the legal
17 language is different than scientific language.

18 Q I'll tell you I didn't know what they were
19 asking for when I read that complaint, so I don't
05:21 20 think you are going to know.

21 But they've provided specific information
22 about the specific remedy they want. Has any of that
23 information been provided to you?

24 A Not that I recall.

05:21 25 MS. STEVENSON: I don't have any further

1 questions.

2 MR. STALPES: Can you give us five minutes?

3 MS. STEVENSON: Yes, but I would love to try to
4 make my flight, if I can.

05:22 5 MR. STALPES: What time is your flight?

6 MS. STEVENSON: 7:35.

7 MR. STALPES: Give us one minute.

8 THE VIDEOGRAPHER: Going off the record. The
9 time now is approximately 5:22 p.m.

05:24 10 (Off the record.)

11 THE VIDEOGRAPHER: Going back on the record.

12 The time now is approximately 5:25 p.m.

13

14 EXAMINATION

05:24 15 BY MR. STALPES:

16 Q Rick, I just wanted to clarify a couple of
17 points.

18 On this last line of questioning that you
19 went through, you were asked whether you know exactly
05:24 20 what the plaintiffs are looking for in this case.

21 Now, have you come to learn through this
22 litigation, and I'm talking about even before today,
23 that one of the things that plaintiffs were seeking
24 was to have their soil cleaned up to background
05:25 25 levels?

1 A Yes. That was one thing that I have heard
2 as a part of a conversation or conversations.

3 Q And do you know whether that's -- whether
4 that occurs in the field of environmental cleanups
05:25 5 and pollution, where a screening level could fall
6 below a background but then the action level is set
7 to the background level?

8 A Yes, that is common.

9 Q Okay. And you testified earlier, I think
05:25 10 maybe you were confused by the question, whether you
11 asked the attorneys to gather any information on your
12 behalf. I am not expecting you to specifically
13 remember that.

14 But I will just ask you, did you ask me or
05:25 15 the other attorneys to gather some information for
16 you from the plaintiffs in the litigation?

17 A Yes. Again, it was more trying to
18 understand what the possible pathways would be to
19 obtain information on vegetables, pets, information
05:26 20 on whether or not anybody grows beef or grows animals
21 for consumption. General information like that.

22 MR. STALPES: That's all I have.

23 MS. STEVENSON: Great.

24 THE VIDEOGRAPHER: This concludes the deposition
05:26 25 of Richard Pleus. The time now is approximately

1 5:27 p.m. This is the end of disk number 4. Going
2 off the record.

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1 REPORTER'S DEPOSITION TIME LOG:

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3 REPORTER - MARIANNA DONNER

4 DATE - MONDAY, JULY 29, 2013

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6 WITNESS - RICHARD C. PLEUS, Ph.D.

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8	ATTORNEY	ON RECORD	OFF RECORD	TOTAL
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9	STEVENSON	9:36 A.M.	10:33 A.M.	0:57
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10		10:46 A.M.	11:47 A.M.	1:01
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11		12:00 P.M.	1:08 P.M.	1:08
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12		1:54 P.M.	2:44 P.M.	0:50
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13		2:55 P.M.	4:14 P.M.	1:19
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14		4:26 P.M.	5:22 P.M.	0:56
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15			TOTAL USED:	6:11
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17	STALPES	5:25 P.M.	5:27 P.M.	0:02
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18			TOTAL USED:	0:02
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2 | COUNTY OF _____)

10 | perjury under the laws of the State of California,

15 | 2013, at _____.

RICHARD C. PLEUS, Ph.D.

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I, the undersigned, a Certified Shorthand Reporter of the State of California, do hereby certify:

That the foregoing proceedings were taken before me at the time and place herein set forth; that any witnesses in the foregoing proceedings, prior to testifying, were placed under oath; that a verbatim record of the proceedings was made by me using machine shorthand which was thereafter transcribed under my direction; further, that the foregoing is an accurate transcription thereof.

I further certify that I am neither financially interested in the action nor a relative or employee of any attorney of any of the parties.

IN WITNESS WHEREOF, I have this date subscribed my name.

Dated: _____

MARIANNA DONNER, CSR, RPR, CLR
CSR No. 7504

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